IDENTITY THEORY - CONTENT AND IMPLICATIONS

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The content of this thesis is my
own work and all sources used
have been acknowledged.

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PART I INTRODUCTION

The thesis is essentially an attempt to establish a comprehensive theory of consciousness, being and knowable reality that is fully consistent both with all the analytic arguments that can be brought to bear in formulating such a theory and with the whole of the relevant scientific and other empirical evidence.

It is considered that such a theory would very probably be an extension of the traditional Identity Theory that a 'mental' state is identical to a 'physical' state and consequently the analysis is directed in PART II to recapitulating the analytic case put forward in support of that theory and evaluating the principal such arguments against it.

Next, in PART III, elements of the scientific and other empirical evidence that are considered particularly pertinent to the analysis are referred to and evaluated in some depth where this is considered appropriate.

Then, in PART IV, the theory derived as an outcome of all the considerations is explicated as an ontology of consciousness, being and knowable reality. It is designated as the deterministic identity theory on the grounds that determinism and the identity thesis are found from those considerations to be principal elements of the theory.

The claim that quantum phenomena are evidence of some kind of ontological indeterminacy in the functioning of the sub-atomic realm and thereby that strict individual determinism is not a true representation of the functioning of the Universe is given particular attention in the analysis in view of the many philosophical theories which have, one way or the other, relied upon it to establish that the Universe is not a totally deterministic and therefore monistic entity or system, i.e., one functioning totally in accordance with the one 'principle' or set of laws.

It is widely held that the 'appearance' of determinism as the mode of functioning of the macro realm is accounted for by statistical instead of individual determinacy. Some philosophers, e.g., the nuclear scientist Eddington in his philosophising mode, have even taken the extreme - and it would seem nonsensical - step of contending that the rejection of the principle of determinism in so far as the functioning of the sub-atomic micro realm is concerned provides an adequate basis for propounding the truth of free will in the realm of human behaviour. Randomness, breakdown of logical relationships in the course of events and thereby meaninglessness would surely be the outcome.

Various lines of argument are very much against holding the above anti-individual determinism beliefs with any degree of conviction and can be held to indicate that the probability of strict individual determinism being true is much greater than that of its being false. The various lines of argument are detailed in PART III and it is concluded therein that the case for ontological indeterminacy at any level of existence of the Universe - micro, macro or as a whole - is without significant substantiation. Reference is also made there to an increasing number of eminent scientists and philosophers who have reached the same conclusion, e.g., Einstein, Planck, Schroedinger, Bohm and, most recently, Hawking and Honderich.

Having established that the probability of strict individual determinism being true is much greater than that of its being false or even that of statistico determinism, the significance of that truth is then analysed. If strict individual determinism (hereafter referred to merely as determinism unless the qualification is of value to the particular text) is true, the Universe cannot be other than a single monistic entity as far as knowable reality is concerned, i.e., an entity functioning in accordance with a single 'principle' or set of laws, since an entity that functions and is entirely interrelated deterministically cannot know or be affected by any other entity. All states, properties and events - mentalistic, physicalistic or whatever - cannot then be other than states, properties and events of this one entity reached and interrelated deterministically and no form of irreducible supervenience or emergence can occur.

Certainly, substance and/or property interactionary dualism involving an element of bi-directional causal interaction between separate mentalistic and physicalistic substances and/or properties - whether completely independent or merely irreducibly supervenient in some way, one upon the other or irreducibly emergent in some way, one from the other- and epiphenomenalism involving unidirectional causal interaction - could be simulated as a consequence of some kind of separation into two distinctly different streams, deterministically interrelated within the overall deterministic system but nevertheless such that they could be described as separate mentalistic and physicalistic substances and/or properties.

However, any such occurrence would not be a departure from what is appropriately designated herein as the theory of deterministic monism. Determinism is a total statement regarding the structure and functioning of the Universe, implying both monism and total compliance with the one set of laws of functioning and interrelationship. It therefore excludes all

forms of dualism which claim the existence of essentially separate substances, properties or whatever, functioning largely or entirely in accordance with fundamentally different sets of laws. Different streams with widely different characteristics could occur but they would still be parts of the one monistic, deterministically functioning system - and never anything else.

In any case, it is further concluded in PART III that there is no demonstrable scientific or other empirical evidence to the effect that any such complex differentiation into two distinctly different streams occurs which could be described as separate mentalistic and physicalistic streams. The empirical evidence is all to the effect that the principle of Occam's Razor applies and that nothing more is required for the occurrence of a particular mentalistic state, i.e., a particular 'experience' or form of consciousness, than the occurrence of a particular physicalistic state. According to all the empirical evidence that can be brought to bear on the subject, the two states are one and the same state picked out by different modes and hence the identity thesis is endorsed in the most direct terms.

As an outcome of all the considerations, an extension of the theory of deterministic monism is formulated in PART IV. It is designated as the deterministic identity theory on the grounds that strict individual determinism and the identity thesis are essential elements and is presented as a comprehensive ontology of consciousness, being and knowable reality that goes much beyond the more general statement made by the theory of deterministic monism.

The deterministic identity theory states that the fundamental constitution of the Universe is a single, universal 'substance' or force; that the structure and functioning of the Universe accords with the principles of monism, determinism and conservation of energy; and that a 'mental' state of a part of the Universe is identical to a 'physical' state of that part, the 'mental' state being picked out and known a priori and incorrigibly and the 'physical' state being picked out and known a posteriori and contingently.

The essential point is that the Universe is a single, deterministically functioning entity or system, structured fundamentally on the basis of some kind of universal commonality, and that the occurrence of a particular mental state of a part of the Universe, i.e., any of the 'experiences' thought, desire, fear, pain, sense of self etc in the case of a human being, is identically the occurrence of a particular physical state

of that part. The two states are nothing other than different modes of picking out, reportings, meanings and knowings of one and the same referent, the ultimate reality being in the fundamental properties of the Universe which give rise to those particular modes, reportings, meanings and knowings and in nothing else.

A number of highly significant statements follow from the theory of deterministic monism and its extension, the deterministic identity theory and are developed in appropriate detail in the body of the thesis.
(1) The Universe can be fully represented by a single mathematical expression with only the one variable term t.
(2) All states of the Universe are merely different forms of the one entity.
(3) No form of irreducible supervenience or emergence can ever occur.
(4) Any state of any level of existence of any part of the Universe, e.g., the holistic state of consciousness of human beings, is theoretically reducible to, i.e., explainable in terms of, the state of any other level of existence of the part.
(5) The world is fundamentally not a collection of discrete 'objects' - the standard view of all forms of so-called revealed religion - but is a single monistic entity wherein all forms of individuality are facets or nodal concentrations of some kind of universal commonality.
(6) The human brain - and presumably its rudimentary or developed equivalent in other animals - is reported, known and described in different terms depending upon the particular mode whereby it is picked out. One of these modes is the mentalistic mode, the brain then being known a priori and incorrigibly, and the other is the physicalistic mode, the brain then being known only a posteriori and contingently. The distinctive difference of meaning between the mentalistic and physicalistic reportings and descriptions of the brain is then that of the difference of meaning between a priori and a posteriori reportings of one and the same entity.
(7) The sense of self is a particular form of cognitive consciousness - that which is identical, in the case of human beings, to a state of the brain when frontal lobes are an effective integral part.
(8) Thought, emotion and behaviour are functions solely of phylogenetic and environmental forces.
(9) Knowledge is limited to what is reachable by the deterministic evolutionary process.

The above statements of the content and implications of the deterministic identity theory are of course merely an inkling - or perhaps an outline - of what may well be the ultimate content and implications of such a theory as science penetrates ever further into the most fundamental realms of

existence and philosophy continues to carry out one of its most important designated roles today - that of fleshing out the discoveries of science and relating these to everyday human affairs as illustrated to a minor extent in PART V relative to certain important issues. It is argued that there is no realm of knowable reality or field of scientific, philosophical or religious concern which is beyond the scope and relevance of a theory such as that of the deterministic identity theory and thereby legitimately beyond the reach of analysis further to the content of the present thesis.

It is finally concluded in PART VI that an entirely new era of understanding and religious belief lies ahead for human beings - and perhaps also a new kind of human being.

PART II PROLEGOMENON

2. The traditional Identity Theory

2.1 Introduction

Complete one-to-one identity of a mental and a physical state in accordance with Leibniz's Law of the Indiscernability of Identicals is claimed by the progenitors of the Identity Theory for the relationship between a state of 'experience', i.e., a 'mental' state, and a state of the part of the body which is held to be the location of 'mental' phenomena. This part is taken by various philosophers to be the body as a whole, the brain or the central nervous system.

Under this condition, the question of whether or not separate entities are involved does not arise. The one referent is merely being described in different terms appropriate to the particular relationship with the world external to the referent. For example, the same star is described or reported as the Morning or the Evening Star under particular positional conditions and the same electrical occurrence is described or reported as lightning or an electrical discharge in the sky depending upon the point of view of the observer.

In the same way, the 'mind' and the brain or the central nervous system are held by the identity theorists to involve merely different modes of description or reporting of one and the same referent and other modes could therefore occur. If we extend the Identity Theory reductively further, notable other physicalistic modes would be the referent described as 'a particular assemblage of biological cells and interrelationships', 'a particular assemblage of molecules and interrelationships', 'a particular assemblage of sub-atomic particles and interrelationships' and, at the most fundamental level, 'a particular concentration, node or localisation of the fundamental force or 'substance' of the Universe. Heisenberg calls this fundamental 'substance' of the Universe "energy" but the term obviously has other connotations which make it quite unsuitable for the purpose.

It would be a corollary of this totally reductive situation that a particular mentalistic state, i.e., a particular 'experience' such as a state of thought, pain, desire etc, is identical to a state of a particular concentration, node or localisation of the fundamental 'substance' of the Universe.

On this basis, the very concept of the mind as being something empirically

real in its own right is a corrupting misnomer in that it suggests and lends implicit support to the dualistic concept of a non-physical, i.e., spiritual entity which is independent of the body in some structural and functional way. According to the identity thesis, no such independent entity exists.

Ryle makes this point when he claims that "...there is a considerable logical hazard in using the nouns 'mind' and 'minds' at all. The idiom makes it too easy to construct logically improper conjunctions, disjunctions and cause-effect propositions..."(1)

It can be argued that this is all that the so-called mind-body problem requires - that the problem is not a scientific but a linguistic one and terms more appropriate to the empirical relationships would solve the problem completely. Indeed this is precisely the reconciliation of mental and physical terms that the truth of the identity thesis would ultimately engender; the category difference between mental and physical terms which are currently so troublesome in formulating a convincing case for the identity thesis would be eliminated.

However, to authenticate such an approach to the mind-body problem would require much more empirical knowledge regarding 'mental' as distinct from 'physical' interpretations than is at present available and such an approach would currently be little more than a play upon words.

It has also been argued that the identity thesis is seriously lacking in that it does not reflect the holistic or Gestalt phenomenon of self-awareness as a discrete individual being. According to this argument, an identity relationship between the 'mental' and the 'physical' as evidenced by a multitude of conditioning, surgical and neurophysiological empirical relationships is still a highly inadequate, indeed meagre, representation of the empirical situation.

So where do we go? Giving the 'mind' the status of a separate dualistic entity is unacceptable as being against the empirical evidence and the Identity Theory as propounded by Place, Feigl and Smart is held to be an incomplete theory as not taking account of the highly significant empirical fact of self-awareness or I-ness. There appears to be no fully satisfying answer which, no doubt, is one of the reasons why there has been such a proliferation of papers dealing with the identity theory and alternative theories.

Papers which, it is considered here, have added something of value to the

more comprehensive approach as taken in the present study, are referred to in the next section.

2.2 History and trends

It would be possible to detail a very considerable number of papers which profess a more complete and inarguable version of the whole or some particular aspect of the traditional Identity Theory than that previously presented but little would be gained by doing so. In conjunction, the papers by Place,[1] Feigl [2] and Smart [3] are generally held to provide a detailed and authoritative presentation of the theory. Smart's presentation is given precedence these days in that it addresses aspects of the theory which are considered to have been left unresolved in the papers by Place and Feigl. Smart's line of argument is reproduced in section 2.3 below as part of a sequential analysis of the theory and the most influential arguments put forward against it.

Two exceptions to the above dismissal (for the purposes of this study) of papers other than those by Place, Feigl and Smart in providing support for the traditional Identity Theory can however be referred to in that they bear somewhat upon the thesis of the present study. The papers are those by Lewis entitled 'An Argument for the Identity Theory'[4] and by Medlin entitled 'Ryle and the Mechanical Hypothesis'.[5] Both look specifically to the empirical evidence to provide support for the rationalist arguments even though in neither case do they detail any of that evidence as is done in PART III below.

The particular value of Lewis's paper in terms of the thesis of the present study lies in two of his claims; firstly, that "...the theory governing any physical phenomenon is explained by theories governing phenomena out of which that phenomenon is composed and by the way it is composed out of them. The same is true of the latter phenomena, and so on down to fundamental particles or fields governed by a few simple laws, more or less as conceived of in present-day theoretical physics."[6] and, secondly, that "A confidence in the explanatory adequacy of physics is a vital part, but not the whole, of any full-blooded materialism. It is the empirical foundation on which materialism builds its superstructure of ontological and cosmological doctrines, among them the identity theory. It is also a traditional and definitive working hypothesis of natural science - what scientists say nowadays to the contrary is defeatism or philosophy. I argue that whoever shares this confidence must accept the identity theory."[7]

Lewis's assertions are a clear statement looking positively to the empirical evidence to provide support for the identity thesis, additional to the analytic arguments of the traditional identity theorists who are

concerned primarily with establishing that the Identity Theory is not false a priori. However, Lewis does not attempt to develop his line of thought further and identify elements of the empirical evidence which could provide specific support for the identity thesis. As a result, his paper can be seen only as pointing the way to a more detailed study of the empirical evidence and the possible derivation of a more comprehensive theory than that of the traditional Identity Theory.

The essence of Medlin's thesis is twofold. Firstly, he questions the validity of the common belief that some 'mental' states are not identically 'physical' states and accounts for the incidence of the belief as being merely an outcome of what he calls "direct awareness".[8] He points out that knowing one is in a particular state is not to know it as a physical condition and he claims that it is this lack of insight which leads to the knower believing that the particular state is something other than a physical state.

Secondly, having rejected the notion that phenomena exist which are not physical states, Medlin declares that this in itself is a general theory of mind. However, as he sees it, the theory says nothing regarding the state described as physical and this question must also be answered before a complete theory of mind is reached.

It is here that Medlin turns to the empirical evidence for clarification and makes the following statement; "It is my opinion that we already have overwhelming evidence for the belief that all biological movement ((which he elsewhere identifies with behaviour)) is explicable in physico-chemical terms."[9] and follows in a way which is "more or less determinate"[10] from the physico-chemical state. He claims that this determinate relationship is enough to validate the theory of Central State Materialism forthwith.

On this basis, the identity thesis follows as a corollary of Central State Materialism, according to Medlin. The only question remaining is that of the specific location of the physico-chemical states which are the causes of the behaviour. He believes that the central nervous system is that location except perhaps for emotions which involve the autonomic nervous system.

Both Lewis and Medlin are looking specifically to the empirical evidence to provide support for the identity thesis additional to that of the analytic arguments of the identity theorists and it is this total approach which in the present study is the basis for the formulation of a comprehensive

theory of consciousness, being and knowable reality.

The substitution of the term consciousness for the term mind in the above statement is deliberate. As already pointed out in Section 2.1, the use of the term mind in a commonly expressed wording of the identity theory that mind and body are identical is clearly a misstatement. Smart has kept on emphasising - without much success it would seem in philosophical circles according to Kim[11]- that it is a state of 'experience' which is identical to a state of the body when a 'mental' state is said to be identical with a 'physical' state, not some kind of entity which could be called the mind; and, since a state of 'experience' is nothing other than a state of consciousness, it follows that a state of consciousness - in every form, either as a state of emotion or a state of thought - is identical to a state of the body according to the theory. In particular, it follows that the process of thought is identical to a deterministically related sequence of states of the body.

2.3 Content and objections

The section is first concerned with recapitulating the analytic line of argument leading to the traditional Identity Theory and then examining the objections which have been raised most prominently and to most effect against the theory. The earlier objections which appear to fall into this category are those raised by essentialists such as Kripke, incorrigibilists such as Baier and functionalists such as Boyd.

Also, since it has recently been put forward at an authoritative level as a reconciliation between determinism and a causal relationship between the 'mental' and the 'physical', Honderich's 'Union Theory' is examined at appropriate length.

Finally, appropriate reference must also be made to certain recent attempts to usefully modify the basic identity thesis while still maintaining its essential features.

A particular element of the case put forward by the progenitors of the traditional Identity Theory, i.e., Place, Feigl and Smart, is that statements of empirical identity - which Smart claims are always refutable since we can never know any empirical event with certainty - are necessarily "factual and contingent" as he puts it; they are subject to modification or replacement in the light of further empirical evidence and therefore we are not in a position to tell from the meanings of the terms alone that an identity exists. In particular, the lack of intertranslatability of the mental and physical descriptions is not an argument against the identity thesis. Being differently sourced, the differences between the mental and physical descriptions and the differences between the mental and physical languages imply nothing either for or against the proposition that the two states are identical and there is no case for arguing that reports of mental events must have the same ostensible meaning as reports of the correlating physical process. A contingent statement of identity entails no such requirement.

Smart notes that there is an inclination to say that the distinctive difference of meaning between the mental and physical descriptions - which must be present if the statement of identity of a mental state with a physical state is only contingently true - is "an irreducible, emergent, introspectible property".[1] Such a difference would be inconsistent with the identity thesis in that there cannot be distinctive properties, only distinctive descriptions or reportings if a mental state is identical to a physical state and he claims that he "gets round this objection"[1] by

arguing that, in the case of such an identity, reports of mental events are topic-neutral and say nothing regarding the properties of the underlying constitution. Consequently, they do not imply either an identity interpretation or a dualism interpretation involving physical and "irreducibly psychical" entities. The identity interpretation is, however, in his opinion, more logical "mainly because of Occam's razor. It seems to me that science is increasingly giving us a viewpoint whereby organisms are able to be seen as physico-chemical mechanisms."(2)

Smart provides an appropriate example of the meaning of the term topic-neutrality as he uses it when he says "If my view is correct, we do notice brain processes, though only in a 'topic-neutral' way: we do not notice that they are brain processes."(3) According to this line of argument, a statement or description regarding a particular mental state, e.g., pain, is a topic-neutral statement or description and says nothing regarding the physical properties of the correlated physical state - which is conventionally taken to be C-fibre stimulation - although the two states are one and the same state.

Smart's line of argument based upon topic-neutrality, Occam's Razor and recourse to the empirical evidence is not convincing. It makes his analytic arguments inconclusive and little more than ancillary to the empirical explanation. One can understand why philosophers have tended to turn away from the identity theory to property dualism; they have even been pointed in that direction by Smart's difficulty in finding an argument that would effectively refute the case for taking the 'mental' to be a distinct property of the brain.

A difference of meaning between the mental and physical descriptions of the brain that would appear to be more acceptable than that of Smart's explanation based upon topic-neutrality is that based upon the different modes whereby the brain is specifically picked out, reported, described and known. On the one hand, there is the a priori incorrigibility of the 'mental' mode and, on the other, the a posteriori contingency of the 'physical' mode, the difference of meaning between mentalistic and physicalistic descriptions and reportings of the brain being therefore that between a priori and a posteriori reportings of one and the same entity. Without the a priori incorrigibility of one's own 'experience', there would be nothing whatever to prove that the Universe is characterised in any way by the 'mental', that the statement of identity of a mental state and a physical state is a meaningful statement dealing with a real relationship and that a complete account of the structure and functioning of the living world is not given by the theory of Behaviourism.

Armstrong is another who is not satisfied with Smart's particular line of argument based upon topic-neutrality and involves himself in a long dissertation to find a more acceptable difference of meaning between the mental and physical terms of the statement of identity - in particular, a meaning of the term mental that, once again, does not imply dualistic overtones of some kind rather than different modes of picking out and knowing the brain.(4)

The dissertation is of little significance vis-a-vis the present study. Enough to note that Armstrong's dissatisfaction, not with the identity theory per se, but with the completeness of the analytic arguments put forward in support of the theory, is typical of the varying levels and modes of dissatisfaction of many others. Scarcely anyone, other than out-and-out traditional identity theorists, appears to be fully convinced by the logic of the arguments put forward to establish that the statement of identity of a mental state and a physical state is not false a priori and that the statement can reasonably be held to be true, subject to final confirmation by further empirical evidence.

Further - as a requirement additional to that of a non-intertranslatable difference of meaning between mental and physical description - the terms of a statement of identity must be intersubstitutable if referentially transparent in the particular context i.e., if they refer directly to the referent concerned and not to the name or some other "oblique" or indirect reference to the referent. Quine makes this point clear in his paper, "Reference and Modality", noting that intersubstitutability of the terms of a statement of identity is only valid for identity statements wherein the terms are "purely referential".(5) With this limitation, intersubstitutability of the terms of a statement of identity is a valid requirement for any identity relationship which accords with Leibniz's Law.

The problem for the traditional identity theorists in this regard was that the mental and physical terms show little possibility of such intersubstitutability and consequently provide little evidence of the existence of a single referent. Whereas the terms gene and DNA molecule, Morning Star and Evening Star etc are intersubstitutable for each other in statements, it appears to be beyond the realm of credibility to say that 'Great C-fibre stimulation is too much to bear.' or that 'One can see the sensation of pain under a microscope.' yet such statements must be meaningful and not nonsensical if the identity of mental and physical states accords with Leibniz's Law.

The solution to the problem is held by the identity theorists to lie in the future of human knowledge when the sides of the statement of identity of a mental and a physical state would be framed more clearly in terms which are purely referential or the meaning of the present terms changes to the point of making them purely referential.

Kripke makes a pertinent comment regarding the apparent deficiency; "The trouble is that the identity theorist does not hold that the physical state merely produces the mental state, rather he wishes the two to be identical and thus a fortiori necessarily co-occurrent." (6)

In effect, Kripke is also pointing here to the most commonly held objection to the traditional Identity Theory - that the terms of the statement of identity are not of the same logical type or category, i.e., not such that they are at least potentially intersubstitutable in accordance with the provisions of Leibniz's Law and Quine's requirement of referential transparency; hence, that the statement does not have the authenticity of the heat/molecular motion, gene/DNA molecule, water/H_2O etc statements of identity where the terms of each statement are of the same logical category and are clearly intersubstitutable while at the same time having different meanings. For this reason, Kripke claims that a causal rather than an identity relationship between mental and physical states would be more logically acceptable.

Kripke's line of argument against the validity of the analogies used by the identity theorists to illustrate what they claim is the relationship between the mental and the physical and, thereby, his line of argument against the validity of the identity thesis itself is worthy of being reproduced here since it contrasts most pointedly with the contingency argument upon which the traditional identity theorists depend in developing their case.

Also, it would appear from the many references by other philosophers to his particular line of argument in rejecting the Identity Theory that the line of argument has been one of the factors which have directed many philosophers away from the Identity Theory to property dualism as a more acceptable theory of the relationship between the 'mental' and the 'physical'.

The basis of the contingency provision in Smart's statement of the identity of mental and physical states is that a statement of identity is

contingently and not necessarily true if it is not possible to establish its truth from the meanings of its terms alone. This is evidently so in the case of a statement of empirical identity since the meanings of the terms never reflect a complete description of the referent in such a case and it is never possible to conclude necessarily from the meanings of the terms that the statement of identity is true, i.e., that only one and the same referent is involved. On this basis, Smart claims that the statement that a mental state is identical to a physical state is of the same genre as that of the analogies, heat/molecular motion etc; they are all contingent, factual statements of identity.

However, Kripke disagrees with this claim. He argues that Smart is not entitled to assume that the statement of identity of mental and physical states is equivalent to those of the supposed analogies, heat/molecular motion etc. In the case of the analogies, the statement of identity is either necessarily true or it is false since one and the same referent is involved or it is not. The element of contingency in the statement of identity can reside only in the mode by which the heat/molecular motion referent, for example, is picked out, cognition that a state of heat exists being possibly due to a referent other than that of heat/molecular motion.

The statements of identity of heat/molecular motion etc are therefore known a posteriori and are refutable, necessary truths, according to Kripke.

Kripke argues that the statement that a mental state is identical to a physical state, if true, must similarly be necessarily true since the states are then one and the same referent. Consequently, the contingency that is apparent in the statement of identity must reside elsewhere as in the case of the analogies. However, he claims that it cannot reside in the link between cognition and the referent as in the case of the analogies since cognition of the state of pain, for example, cannot be separated from the sensation of pain. They are one and the same thing, according to Kripke. Hence the contingency that is apparent in the statement of identity of the mental and physical states of pain can reside only in the relationship between the mental sensation and the physical counterpart and the statement of identity must be false.

Since similar analyses of all other mental/physical relationships would produce the same result, it follows, according to Kripke, that the identity thesis must be false and the materialism thesis as a whole must be seriously questioned.

It would appear that there may be considerable confusion here. It would appear to be a confusing of the issue to relate the mental/physical question only to internal, obviously highly complex and little understood relationships within the brain as Kripke does. There is no apparent reason why the question should not be considered from the point of view of an external observer in exactly the same way as the analogies.

On this basis, the statement that a mental state is identical to a physical state, if true, is necessarily true as Kripke asserts for the analogies and the contingency apparent in the statement of identity is once again associated with the mode by which the referent is picked out by the external observer.

Similarly to the means employed by Kripke to emphasise the essentiality of the identity relationship in the case of the analogies, the statement of identity of mental and physical states can also be counterfaced by a statement of identity of mental and physical states in which one of the terms "does not designate rigidly", using Kripke's expression for a term which represents a contingent and not a necessary property of the referent. A counterfacing statement of identity of this type is as follows; 'That which is evidenced in communication between human beings is identical to a brain process.' In this case, communication is the contingent property of the referent by which the referent is picked out. Other sources of that communication, e.g., a mechanical source, could occur and the communication could be interpreted as being sourced other than in a brain process.

Smart and Armstrong direct an analytic argument against Kripke's assumption that cognition and sensation are one and the same state. As Smart puts it, "Both the materialist and the dualist, and indeed most behaviourists also, will want to say that the sincere reporting of a sensation is one thing and the sensation reported is another thing. Now, as Hume said, what is distinguishable is separable. It is therefore logically possible that someone should sincerely report an experience and yet that the experience should not occur."[7]

Armstrong is even more specific. "But in fact, the apprehension of something must be distinct from the thing apprehended. For if not, we are

faced with a flagrant circularity. Having a pain logically involves apprehension of - what? The pain itself! This is as bad as saying that to be a cat logically involves being the offspring of cats. It seems, therefore, that there must always be a distinction between being in a mental state and being aware that we are in that state. Hence there can be no indubitable introspective knowledge."[8]

Armstrong particularises the same point in his statement, "But it seems clear that the natural view to take is that pain and awareness of pain are 'distinct existences'. If so, a false awareness of pain is at least logically possible."[9]

In claiming that separability of cognition or cognitive awareness and sensation or sensory stimulation is always at least logically possible, Smart and Armstrong are of course rejecting Kripke's assumption that cognition and sensation are one and the same state.

Finally, in the case of the mental/physical relationship, there is considerable empirical evidence against Kripke's assumption that cognition and sensation are one and the same state. In assuming that there is a causal and not an identity relationship between mental and physical states, Kripke is at least assuming that cognition and sensation correlate with brain processes and it is highly relevant to note that the empirical evidence indicates that cognition and sensation do not correlate with one and the same brain process.

The empirical evidence presented by Gardner[10] is particularly informative in indicating that the brain process correlating with cognition is different from the brain process correlating with sensation, the link between the two processes being modifiable or interruptible in a variety of ways - by innate disability, damage, surgical operation etc. By such means, cognition of a sensory condition, e.g., that involved in the occurrence of the sensory state of pain, can be diminished or eliminated. Cognition of such a sensory condition can also occur or be induced without the sensory condition actually being present.

In view of all these considerations directed against Kripke's a priori assumption that cognitive and sensory states of the brain are one and the same state, it would appear that his line of argument against the identity thesis can be seriously questioned since it depends upon that assumption.

The incorrigibility argument against the identity thesis is that the relationship between sensation and cognition or cognitive awareness of

sensation is incorrigible whereas the link between the brain process involved in sensation and the self-scanning brain process involved in cognition of sensation "can fail to operate properly", using Armstrong's expression for the situation.

Two lines of argument can be directed against the notion of incorrigibility as applied against the identity thesis, these being very much the same as those directed above against Kripke's assumption that cognition and sensation are one and the same state.

Thus, the first line of argument against the incorrigibility thesis is that the incorrigibilists are not entitled to limit their claim to internal subjective interrelationships within the one brain. Such internal interrelationships are obviously highly complex and self-reflexive and enable no reliable conclusions to be drawn regarding the relationship of cognition and sensation.

On the other hand, evaluated by an external observer, it is well-known that cognition is often in error in interpreting sensation. One case of this type of error, i.e., that wherein cognition reports a sensation which does not exist in real terms, is even given a formal classification - psychosomatic.

There are also cases where it is apparent to an external observer that sensory stimulation is occurring without the person concerned being fully or at all aware of the fact.

The second line of argument against the incorrigibility thesis is that contained in the statements by Smart and Armstrong quoted above and amounting to the statement that cognition and sensation are distinct existences and are therefore logically separable and not such that the link between them is incorrigible.

The third line of argument directed above against Kripke's attempt to refute the Identity Theory was that the empirical evidence does not support Kripke's assumption that cognition and sensation are one and the same state. This is not applicable in the argument against the incorrigibility thesis since the incorrigibilists' case against the identity thesis is specifically that the link between the brain's cognitive and sensory mechanisms is interruptible whereas the link between cognition and sensation is incorrigible, i.e., not interruptible.

It is evident from the above considerations that the incorrigibility argument against the identity thesis derives much of its support from the

confusions attendant upon subjectivity and self-reference. Without such support, there is little to be said in favour of the argument. It can strongly be held that the 'mental' link between sensation and cognition is as interruptible as the link between the brain process involved in sensation and the brain process involved in cognition and, consequently, that the incorrigibility argument against the identity thesis is invalid.

Boyd presents Kripke's essentialist thesis on a somewhat different basis and with a different end in view, that of establishing a case for the rejection of Kripke's conclusion that the essentialist thesis throws considerable doubt upon the theory of materialism. He recapitulates the arguments of the traditional identity theorists as being in accordance with a Lockean or empiricist account of reality de dicto, i.e., such that "necessarily true statements are just those whose truth follows from the meanings of their constituent terms."[11] On this account, if the truth of a statement of identity is not known a priori from the meanings of the terms, then the statement of identity can only be contingently true. In this case, different meanings can be ascribed to the sides of the statement and the different descriptions do not have to be intertranslatable.

He next considers what he classifies as a non-Lockean or essentialist account of reality and necessity de re, i.e., such "that the essential properties of a thing do not depend on a particular description of it."[12] On this account - Kripke's thesis rephrased - it does not follow that refutability implies the non-existence of necessity in the statement of identity as assumed by the traditional identity theorists. Necessity and apriority are separated and a statement that an object A has an essential property B will, if true, be true necessarily, even if not known a priori. In this case, contingency is not a valid modal alternative for the statement of identity - the statement of identity is either true or false - and the contingency that is apparent must derive from a source other than that of the relationship between the sides of the identity statement.

Boyd refers to the strategy which Kripke used to bring this point out, i.e., comparison of the original statements of identity of the analogies with corresponding statements of identity which are clearly contingent. For example, he compares the statement of identity, 'Water is identical to H_2O.' which is necessarily true according to the essentialist approach, with the corresponding contingent statement of identity, 'The cooling, tasteless, odourless, wetting liquid that quenches thirst is identical to H_2O.' In this case, the statement of identity is a contingent statement since it involves the way the liquid is picked out and this is an empirical

report which may or may not lead to H_2O.

It is at this point that Boyd disputes Kripke's line of thought. He disagrees with Kripke's claim that the statement of identity of a mental and a physical state cannot similarly be counterfaced by a contingent statement of identity and consequently, according to Kripke, that the contingency that is apparent in the original statement of identity can reside only in the relationship between the mental and physical states. According to Kripke, this can only mean that the identity thesis must be suspect.

However, Boyd holds that the statement of identity of pain and C-fibre stimulation, as a standardised case of mental and physical identity, can be counterfaced by a contingent statement of identity, based not upon the substitution of "an appropriate purely qualitative description that does not designate rigidly"[13] for the term 'pain' - which Kripke denies is possible - but upon the substitution of such a description for the term 'C-fibre stimulation'.

As Boyd puts it, "Of course, this can be done. For any physiological or anatomical description like the imaginary 'C-fibre firings' there is certainly a possible world in which something has the qualitative properties typically associated with the term in the actual world but really is not, in this case, an instance of 'C-fibre firings'.[14]

Thus, according to Boyd's line of argument, the indicators by which cognition picks out the occurrence of C-fibre stimulation or 'firings' could be produced by some occurrence other than C-fibre stimulation. The contingency that is apparent in the statement of identity of pain and C-fibre stimulation could therefore be a function of the mode in which cognition picks out the occurrence of C-fibre stimulation, i.e., the sensation of pain, and the statement of identity of pain and C-fibre stimulation, if true, would be necessarily true in the same way as the statement of identity of water and H_2O, if true, is necessarily true.

On this basis, it would appear that Kripke's arguments against the identity thesis are further invalidated since it is a prime element of his arguments that the statement of identity of a mental and a physical state cannot be counterfaced by a statement of identity in which a term does not designate rigidly and consequently that the contingency apparent in the statement of identity can only reside in the relationship between mental and physical states.

As a result of the above, we now have two lines of objection to Kripke's arguments against the identity thesis. Firstly, there is the line presented earlier in this section in which Kripke's assumption that sensation and cognitive awareness of sensation are one and the same state is rejected and therefore that the contingency apparent in the statement of identity of a mental and a physical state can reside in the mode by which cognition picks out sensation.

Secondly, Boyd is noting that a contingent statement of identity of mental and physical states can be formulated in which one of the terms does not designate rigidly and consequently that the contingency in the statement of identity of a mental and a physical state can reside in the mode by which the mental/physical referent is picked out; hence that the statement of identity of a mental and a physical state, if true, is necessarily true in the same way that the analogies, if true, are necessarily true.

Boyd is intent upon refuting Kripke's anti-identity thesis and anti-materialism arguments primarily in order to leave himself free to present his own particular version of the materialism thesis. He claims that mental states are functional or configurational and not compositional states of organisms and the remainder of his paper is an attempt to establish a sound case in support of this thesis.

According to this functionalist form of materialism, the phenomenon of pain can be realised by any one of a set of physiological or even non-physiological compositional states - in particular, different compositional states in the case of a wide variety of animal forms but also including, at least on the basis of being logically possible, partially or totally non-physiological compositional states such as that of a 'mechanical' system.

It is a one-many situation which, Boyd contends, is neither type-type or token-token compositional identity but a relationship between a certain configuration and a pertinent set of compositional systems which have as a function of their particular compositions the configuration 'pain'.

Boyd claims that this is the explication of the materialism thesis which is most plausible in the light of the available empirical evidence and that it makes Kripke's arguments against the identity thesis, and thereby against materialism, totally irrelevant since the identity thesis is not a valid theory of the mental/physical relationship in the first place.

At the same time, according to Boyd, Kripke's essentialist line of thought - that properties of a referent can be essential to it and not merely a matter of Lockean or empiricist description - remains unaffected by the configuration/functionalism explication of the materialism thesis and continues as the basis for scientific investigation and determination of the properties.

It would seem that Boyd's functionalism theory provides a neat reconciliation of all the relevant theories and empirical evidence but there appears to be a flaw in the line of argument which, if true, makes his rejection of the identity thesis invalid. The flaw appears in his very attempt to replace the identity thesis by a configurational or functionalist thesis wherein mental states "are not definable in physical terms" according to Boyd [15] but are particular configurational states realised by any one of a number of different compositional structures or states.

The flaw is that of Boyd's unwarranted assumption that what he calls compositional plasticity, e.g., the range of compositional states which can bring about the state of pain, implies a configurational rather than a compositional relationship between mental and physical states,

A particular case of the range of compositional states is that of the extensive redundancies within the human brain. Boyd refers to this case himself; "For example, the most plausible accounts of certain cases of recovery from aphasia induced by brain lesions seem to be that the relevant information-processing function of the damaged tissue is taken over by parts of the nervous system that do not typically perform these functions. There is no reason to doubt the logical possibility (indeed the practical possibility in many cases) that mental and psychological states other than linguistic capacities also display a similar plasticity."[16]

There is no apparent reason to ascribe configurational rather than compositional significance to such a redundancy. It can be held, at least as strongly, to imply nothing more than a range of type-type compositional identities, token-token identity occurring at any point within the range. Such a redundancy would be a logical evolutionary development under highly competitive conditions. An organism with a highly limited redundancy range of brain properties could quickly become extinct under ever changing environmental conditions, both those due to climatic changes and those due to the impact of other evolving life-forms.

Nor does Boyd appear to be justified in claiming that only a

configurational explanation can account for the occurrence of the state of pain in such varied brain structures and compositions as occur in the rest of the animal world. It is an anthropocentric construal to claim that a brain structure and composition greatly different from that of the human brain is to be regarded as not being capable of producing the state of pain. Introducing the configurational interpretation to explain the difference would appear to be an unnecessary and unwarranted complication unless distinguishing evidence is put forward to justify that introduction. Boyd does not do this.

Boyd refers to the empirical evidence as though this supports the functionalism thesis rather than that of identity but there is nothing in the evidence to justify such an interpretation. Perhaps that is why he makes the following statement; "The point is that there is no evidence that mental and psychological states should not be viewed as computational states of organisms."(17)

However, positive evidence is required, not a lack of negative evidence, if the functionalism thesis is to be accepted in preference to the identity thesis. Possible such evidence is available only in the simulation by computers of the brain's mode of processing information but the simulation clearly establishes nothing other than something of the characteristics of that brain process. It establishes nothing whatsoever regarding the other vital state of the brain - that of consciousness.

Kalke presents a slightly different line of objection to the functionalism thesis. He relates external functional behaviour to internal 'black box' structure, arguing that there is no clear-cut meaningful boundary between the functional and structural states and that any boundary is dictated more by the current level of empirical knowledge regarding any phenomenon than by any precise definitive distinction between the two states. (18)

While Kalke's claim might be disputed by the functionalists in the particular realm of computer simulation of information processing by the brain - the boundary there between the internal mechanism of the brain and the delivered output could be held to be well-defined although even this is highly questionable - his argument against the functionalism thesis is certainly difficult to dispute in the case of brain phenomena such as pain. There is simply no evidence that the occurrence of the sensation of pain is in any way independent of and not identical to the occurrence of a particular compositional state of the brain. To extend the computational case to the point of claiming that the occurrence of the

sensation of pain is logically possible irrespective of the nature of the compositional state is far too great a logic step.

What we are claiming above is that the functionalism thesis neither replaces nor adds anything significant to the identity thesis. Neither the arguments advanced by functionalists such as Boyd nor the empirical evidence provides any significant support for preferring the functionalism thesis to that of identity.

Honderich represents a special class today - that of those who fully accept the truth of determinism but reject the identity theory. He holds that the brain has separate mentalistic and physicalistic properties, as distinct from being picked out and reported by different mentalistic and physicalistic modes as in the identity theory, and that these properties stand in different relationships to the environment. Hence, that an identity relationship does not exist.

As an analogy, he refers to the case of a yellow pear placed on a scale. The property of colour and the property of weight of the pear have different effects upon the scale and Honderich claims that mentalistic and physicalistic properties of the brain are similarly differentiated in relation to the environment.(19)

In place of the identity thesis, he introduces his Union Theory, this being a combination of his Correlation Hypothesis, that there is a lawlike correlation between "neural and mental events" and his Hypothesis on the Causation of Psychoneural Pairs, that "mental events are explained by certain causal sequences".(20)

It would appear that Honderich is in error in his assumption that the 'mental' and the 'physical' are each properties of the brain, separately existing, separately related to the environment and causally related to each other, thereby implying the possibility of independent existence. This was the simulated dualism of properties within the one deterministically functioning system that was mentioned briefly in PART I as being, even if it existed, merely a particular form of monism, i.e., that wherein the mentalistic stream is tied deterministically and therefore inseparably to the physicalistic stream, the two streams being in reality a single stream functioning in accordance with the one set of laws, and as being, in any case, according to the empirical evidence, such that nothing more is required for the occurrence of a particular mentalistic state than the occurrence of a particular physicalistic state, i.e., the two states are, in reality, one and the same state.

Apart from objections to the identity theory such as those examined above, there have been a number of attempts to significantly modify the content of the theory without denying its basic validity. Three such attempts are perhaps worthy of passing mention - the 'disappearance' form of the theory, the theory of eliminative materialism and the theory of emergent mentalism with its sub-theory of downward causation. On close examination, all appear to add nothing significant to the basic identity theory and to merely confuse or trivialise the issue.

However, to refute or strongly question the arguments against the identity theory is not to solve all problems. It is one matter to establish that the identity theory is not false a priori and that the most prominent analytic objections to the theory are ill-founded or otherwise unconvincing. It is quite another to provide positive scientific and other empirical evidence in support of the identity theory and to ascertain what are the fundamental properties of the mental/physical state. An identity relationship between mental and physical states moves the problem from being that of the relationship to being that of the reductive constitution of the mental/physical state - right down to the most fundamental level of constitution of the entity concerned.

However, before dealing with this wider issue in some detail, it is first necessary to note that a state of stagnation appears to have been reached in philosophical deliberations regarding the identity theory and it is claimed here that this state of stagnation has been reached because a fully comprehensive approach has not been taken to the problem.

In the case of the present study, it is considered that this more comprehensive approach should take a particular course at this juncture of the study; first, a review of the pertinent empirical evidence and then an attempt to formulate a theory that derives convincingly and comprehensively from both the analytic arguments and the empirical evidence and provides a useful account of some of the most fundamental properties of the Universe. These two elements of the overall project are developed in PARTS III and IV below.

However, before proceeding with this task, it has become evident that there is a need to clearly establish the meaning of certain, important terms before proceeding to the main body of the study and much of section 3. is directed to this end.

3. Meanings and clarifications

3.1 Reductive identity vis-a-vis irreducible supervenience and emergence

The meaning ascribed to the term reductive identity is not limited to the present study. The term is used widely with the same meaning - that of designating the various structural levels of occurrence and properties attached to one and the same entity such as the brain or to any other such single entity whatsoever. Thus, according to the identity theory, the brain has certain holistic properties, i.e., properties beyond those of its parts standing alone but totally reductive thereto, the holistic properties being theoretically explicable in terms of the properties of the parts and therefore being theoretically predictable therefrom. Similarly, the molecular assemblies of which the parts of the brain are constituted have holistic properties beyond those of the molecules of which they are constituted but totally reductive thereto; the individual molecules of which the molecular assemblies are constituted have holistic properties beyond those of the atoms etc of which they are constituted but totally reductive thereto; and so on down to the fundamental level with its own particular properties whatever they might be and which underlie the properties of the brain at all its levels.

It is this hierarchical form of reductive identity that is an essential element in the meaning of the term identity in the present analysis. It is in complete contrast to the concept of irreducible supervenience and emergence which ascribe properties to 'higher' levels of assemblage of the 'material' of the Universe which are not reducible to, i.e., explicable in terms of, properties of lower levels and therefore not predictable therefrom. Supervenience is taken here to be an irreducible relationship between two entities or systems as a consequence of an entity or system functioning in accordance with a 'principle', i.e., set of laws, different from that of another entity or system which it is superimposed upon in some way. Emergence similarly involves two entities functioning in accordance with different, irreducible 'principles', i.e., sets of laws, but in this case one entity or system is some kind of irreducible evolutionary development from the other entity or system.

3.2 Logical necessity vis-a-vis deterministic necessity

Clarification of the distinction between logical and deterministic necessity, i.e., strict individual determinism, is important to the thesis of the present study as a means, not only of heightening the distinction between the real world and the representation of the real world - the world-image, but also clarifying the distinction between the process of thought as a logical, and often illogical, sequence of states of the brain and the process of thought as a deterministic sequence of states of the brain as part of the deterministic functioning of the Universe.

On the one hand, the modal meaning of logical necessity is strictly a philosophical question and it has been dealt with at great length on that basis without any conclusive explication being reached according to some philosophical opinion.

On the other hand, the principle of deterministic necessity is commonly expressed in the statement, if p then q, where p and q are states of the Universe, but this is essentially an epistemological formulation of the principle and is subject to analysis of the meaning of 'if' and 'then'. An ontological formulation of the principle is that where the Universe is represented by a mathematical formula such as that by Russell:[1] Time being the only variable in such a formula, the state of the Universe is determined throughout all eternity.

It has also been suggested, e.g., by Einstein [2] and Davies,[3] that the concept of necessity is applicable to the Universe with the meaning of total or systemic necessity - that the Universe is the only possible universe and could not have been or be anything other than what it was, is or ever will be.

To reach the most complete understanding of the distinction between logical and deterministic necessity, the requirement is not merely that of distinguishing between a statement of logical necessity as a particular form of modality in formal logic processing and a statement of deterministic necessity as an empirical truth on the grounds of extensive, consistent and predictive empirical evidence of the mode of functioning of the Universe. It is also that of rejecting the common belief or unconscious assumption that the process of thought is somehow independent of the process of deterministic necessity as the mode of functioning of the Universe.

The present analysis concentrates initially upon this point since it is

most sharply in conflict with prevailing religious and most philosophical thought today. This effectively - if not consciously - accords with the assumption that the human brain is, or contains, some kind of independent, homuncular entity which is somehow able to function independently of the world external to the brain yet is able to interact with that world. The work of Spinoza, d'Holbach, Darwin, Freud, Einstein etc and, to a lesser extent, Place, Feigl and Smart, has made considerable inroads upon this anthropocentric form of dualism but a monistic and deterministic theory of consciousness, being and knowable reality has only just begun to take its place.

What we are drawing attention to here is the statement that, if true, deterministic necessity is true of <u>every</u> functional relationship within a monistic universe. Such relationships would include all relationships reported or described as 'mental' and consequently the whole course of human thinking, including the very occurrence of such concepts as those of logical and deterministic necessity and the whole edifice of science and technology. It can be held that, without the principle of logical necessity as a basis for constructive human or machine thinking - in particular, construction of the edifice of science as an image of the real world - the principle of deterministic necessity could never have become apparent with its prospective impact upon almost every realm of human understanding and affairs; and, without the principle of deterministic necessity with its statement of the orderly functioning and evolution of the Universe, the principle of logical necessity could also never have become apparent.

It is evident that the relationship between logical and deterministic necessity warrants considerable analysis and the relationship has been examined by a number of thinkers, Planck, [4] Kripke [5] and Quine [6] among them, but no one has developed the principle of deterministic necessity to its logical conclusion vis-a-vis the identity theory and the whole range of human thought as is attempted in the present study.

If the principle of deterministic necessity, i.e. determinism, is not a true interpretation of the mode of functioning of the whole of the Universe, then the whole structure of science, technology and rational thought becomes suspect and possibly nothing other than a grand illusion. The empirical evidence is against such a nihilist conclusion even though the very truth of the principle of deterministic necessity would itself appear to imply that nihilism is the only logical interpretation of the empirical position according to some, more narrowly conceived points of view.

The phenomena of the quantum has led many philosophers to adopt an alternative theory - that the mode of functioning of the Universe is only statistico deterministic, i.e., that there is an element of ontological indeterminacy in the functioning of the sub-atomic realm and thereby in the macro realm that makes perfect predictability and retrodictability impossible.

The line of argument does not appear to be sound. An element of ontological indeterminacy in the sub-atomic realm could only bring about an element of randomness and meaninglessness in the functioning of the macro realm and in the functioning of the Universe as a whole but science has never confirmed the occurrence of any such events. Sooner or later, a logical, unprobabilistic explanation has always been forthcoming and such explanations are evidence of a deterministic process. Precise prediction and retrodiction is found in practice to be increasingly the norm in all areas of science and technology and the theory of ontological indeterminism is increasingly without empirical support. It is also now without the support of such scientists as Einstein, Planck, Schroedinger, Bohm and Hawking and such philosophers as Russell and Honderich.

3.3 Consciousness

Since clarification of something of the fundamental meaning of the term consciousness is one of the prime objectives of the present analysis, it is important - in view of the prevailing lack of precise definition of the term - to clarify what is at least designated by it.

Probably the most basic statement that can be made about consciousness in any terms is that it is simply not definable since it is an a priori absolute and the only means by which it can be described, i.e. picked out, by human beings are contingent means, fundamentally of much lower rank than consciousness itself.

However, we can at least consider the various forms in which consciousness can be held to occur and the nature of consciousness vis-a-vis the nature of mentalistic states in general and this has been done by a number of philosophers, Rosenthal[1] and P.M.Churchland[2] among them.

Although both of those referred to show a considerable lack of conviction in many of their statements, one of their more positive statements is that by Rosenthal to the effect that "Conscious states are simply mental states we are conscious of being in."[3] and probably few would disagree with the assumption, implicit in the statement, that an element of introspection or "higher-order" thinking (using Rosenthal's terminology) is necessarily involved in the occurrence of consciousness.

However, the empirical evidence does not appear to support such an assumption. Rosenthal himself refers to such evidence. "Perhaps the strongest objection to an account in terms of higher-order thoughts is that there are creatures with conscious sensations whose ability to have thoughts at all may be in doubt. Infants and most nonhuman animals presumably have a rudimentary ability to think, but plainly do have conscious sensations. But one need not have much ability to think to be able to have a thought that one is in a particular sensation. Infants and nonhuman animals can discriminate among external objects, and master regularities pertaining to them. So most of these beings can presumably form thoughts about such objects, albeit thoughts that are very likely not conscious."[4]

Also Churchland refers to evidence that animals of a lower evolutionary or hierarchical order such as rhesus monkeys, macaques, baboons and even "some profoundly retarded humans" appear not to be conscious of

themselves whereas higher order animals such as chimpanzees definitely are.[5]

Also again, as referred to in more detail in section 7.2 below, Gardner's medical experience has led him to the conclusion that human beings who have lost the use of the frontal lobes of their brains - where conceptual power appears to reside according to other medical evidence - show no evidence of any sense of self although otherwise not severely handicapped. On the other hand, he has noted that brain-damaged patients whose brains still retain effective frontal lobes still appear to retain a definite sense of self even though otherwise extensively handicapped.

It cannot reasonably be held that a monkey, a human being who has lost the frontal lobes of his brain and the whole range of non-human, 'lower' forms of animal are not conscious of the external world even if not of themselves and of their own mental states so that Rosenthal's statement appears to be definitely flawed.

Hence, on the evidence, it would appear that it is not consciousness of being conscious that is the mark of consciousness as Rosenthal claims but cognition defined as merely a state of practical or experiential awareness of the external world and of interaction with that world.

In other words, it would appear that, where an organism has any kind of sensory mechanism and any kind of interpretative mechanism - a brain or a rudimentary equivalent of such an organ - that interpretative mechanism can either be in a basic state of cognition, i.e., cognitive consciousness, relative to the external world or - under more developed and evolved conceptual conditions as evidenced by the development of frontal lobes in the case of the human brain - it can be in a state of cognitive consciousness which includes introspection - in particular, a sense of self and consciousness of being conscious.

On this basis, consciousness always involves cognition and it is a tautology to add the term cognitive to the term consciousness. Nevertheless, this is done at appropriate points throughout the present analysis in order to emphasise the cognitive nature of the particular relationship being referred to. The juxtaposition is not to be taken as implying in any such case that a form of consciousness is held to occur which could be described as non-cognitive in terms of cognition as defined above. It is difficult to conceive of any such form of consciousness.

3.4 Sweeping clean

The context within which the statement of the deterministic identity theory is being made is now almost complete. Previous sections of this study have re-asserted the truth of the identity thesis, pointed to the widespread lack of conviction as to that truth and indicated something of the more comprehensive and penetrating deterministic identity theory which it is claimed herein is the most logical interpretation of the analytic and empirical evidence.

There would appear to be little justification for attempting to further validate the analytic arguments put forward by the traditional identity theorists in support of the identity theory or to further refute or strongly question the objections raised by those attempting to disprove those arguments. It would appear that all relevant arguments have already been presented from every possible point of view by the philosophers who have concerned themselves with the problem.

In any case, the line of justification put forward by the progenitors of the Identity Theory was concerned primarily with establishing that the theory is not false a priori and there was no attempt to directly prove that the identity theory is a true statement of the relationship between the 'mental' and the 'physical'. Such a proof would be an empirical statement - a scientific image of the real world - and, as an empirical statement, it requires empirical verification. This is attempted in PART III of the study.

However, the analysis to date at least indicates that there is considerable justification for making the following two statements;
1. The identity theory is a true statement of the relationship between a 'mental' and a 'physical' state.
2. The identity theory is only an element of a more comprehensive theory of consciousness, being and knowable reality.

The remainder of the present study is directed to further developing and establishing the validity of these two statements and deriving from them details of that more comprehensive theory.

PART III THE EMPIRICAL EVIDENCE

4. Introduction

It is not within the scope of the present study to examine all the current arguments for or against the truth of the principle of determinism except for one very important aspect which is dealt with in section 5.1 below - rejection of the claim that the form of indeterminacy observed in the sub-atomic realm provides convincing evidence that the principle of determinism is false.

All the scientific arguments of any note have otherwise been examined by Davies in his most informative book, "God and the new Physics", [1] by Earman in his equally impressive book, "A Primer on Determinism"[2] and, most recently and authoritatively, by Hawking in his 'A Brief History of Time'.[3] Honderich has also, in considerable detail in his 'A Theory of Determinism', [4] recently considered the empirical evidence put forward, for and against, the principle of determinism and concluded that the principle is true throughout all realms of existence of the Universe. The statements made below regarding the scientific and other empirical evidence that points to the truth of the theory of deterministic monism and to its extension, the deterministic identity theory, provides only an outline of the particularly relevant scientific evidence and the books referred to must be consulted for a full treatment.

All that is required for the present study is an explanatory listing of the empirical items which individually and collectively provide a vast amount of consistent evidence pointing to the truth of the deterministic identity theory, far outweighing in importance any peripheralistic intuition or experience or any fringe phenomenon which could be held to indicate that the theory is not entirely true. It is the great bulk of consistent empirical evidence that counts, not the peripheralistic intuitions, hopes and traditional indoctrinations or the little understood phenomena at the outermost fringes of scientific knowledge.

The ascription of truncated causality to the relationship between events has also been a source of very considerable misunderstanding. To ascribe a particular cause to an event is typically to unjustifiably truncate a much longer causal chain, thereby closing the door to a full understanding and frequently to open the door to gross misinterpretation. Meyer is typical of those who are guilty of this particular form of non-sequitur when he argues that "God exists." solely as a consequence of his argument that there has to be a first cause and that a first cause can only be God.[5] He

thereby joins the class of rationalist philosophers who have very largely ignored the empirical evidence in favour of highly directed speculation built upon theoretical premises which bear little relation to empirical reality.

Meyer's proof of the existence of God is no more convincing than that of Aquinas or of the many others who have attempted to prove the existence of God on purely rationalist grounds such as that of the cosmological argument for the existence of God. There is no demonstrable empirical evidence to support their claim that there was a first cause of the Universe and that a god was responsible for that first cause any more than there is any demonstrable empirical evidence to support the claim that there will be a last effect, i.e., total annihilation of the Universe, and that a god will be responsible for that last effect.

The demonstrable empirical evidence is solely to the effect that the Universe exists and, since it exists, the evidence can only be held to imply that it will continue to exist indefinitely into the future in one form or another and has existed, in one form or another, indefinitely in the past, the Big Bang, the primary plasma state, some kind of 'singularity' or whatever else is taken to be the primary state of the Universe being merely some kind of transition point between particular states of reality.

The philosophical principle which transcends all other philosophical principles relating to the structure and functioning of the Universe is that which states, in accordance with the most a priori of premises and paradigms - and also with all the known empirical evidence - that something cannot come from total nothing and something cannot become total nothing. What is, always was and always will be in one form or another.

Certainly, it is logically possible that there could have been a first cause of the occurrence and/or deterministic functioning of the Universe, e.g., as an extension of a deist god at the time of whatever is taken to be the primary state of the Universe or a particular state at some particular point of its evolutionary history, but it is not logically provable that there could have been a first cause of everything which ever existed, including the existence of the deist god. Such an event would have required that something originated in total nothing or that creation occurred after the coming into existence of what had been created - both propositions being outside the realm of sustainable logic.

It follows, at least in terms of sustainable logic, that the Universe has always existed and always will exist in one form or another.

5. Physics: the structure and functioning of the Universe

5.1. General

It was said by Nietzsche that there is no way in which we can establish whether or not the course of evolution of the entity which we call the Universe accords with the principle of determinism. Expressing the principle in the form, if p then q, his statement is equivalent to the statement that we cannot know whether or not there is a randomness in the course of events such that q is not a specific state following upon the occurrence of p but can encompass a limited or an infinite range of states.

The statement appears to be flawed since it is evident that the whole of science and technology depends upon the truth of the principle of determinism - or at least statistico determinism, as some would have us believe is the form of the course of events. Science and technology could not exist if events did not occur at least statistico deterministically and thereby predictably within at least an extremely high order of accuracy. As Russell says, "Determinism, whether universally true or not, is coextensive with the sphere of possible scientific knowledge; where it fails, scientific knowledge fails."[1] and this is a valid statement even allowing for the possibility of a limited measure of some kind of ontological indeterminacy in the functioning of the sub-atomic realm. Any such indeterminacy would introduce an element of randomness and meaninglessness into the functioning of the macro realm and, to that extent, limit the predictability and retrodictability required for the practice of science and technology. No such limitation to the practice of science and technology has ever been established.

In other words, whatever the particular mode of functioning of the sub-atomic realm might be and whatever 'hidden variables' are yet to be discovered that might account for that mode in more fundamental terms, the total of the evidence as it stands today is in favour of the sub-atomic functioning being taken to be merely a particular form of deterministic interrelationship with the other realms of existence of the entity or system that is the Universe. If it did not involve any such interrelationship, i.e., if it occurred and functioned without being subject to any force from elsewhere in the Universe, it would be a form of self-creationism with all the philosophical and empirical difficulties attached to such a concept.

The claim that q, although not related to p fully in deterministic terms, is nevertheless constrained within a limited range of possibilities dictated

by p is a claim which still has an element of self-creationism in it and to that extent is similarly highly questionable.

It is also highly relevant to note that the phenomena of the sub-atomic realm are currently evaluated by applying macro concepts such as momentum, position and velocity which is clearly naive in view of the known, but as yet almost entirely inexplicable, complexities of the micro realm such as the wave/particle duality instead of what were previously thought to be merely simple particles and the universal commonality of some kind that is implied by the quantum phenomena according to some scientists. All such phenomena are clearly beyond the reach of current macro concepts and need to be fully understood before anyone can justifiably claim that the occurrence of some kind of ontological indeterminacy is proven. Any claim that a recent experiment in physics has provided a complete and final answer to the question of the mode of functioning of the micro realm is, to say the least, highly presumptive at the present embryonic stage of investigation and knowledge regarding the properties of that realm.

As regards the particular properties of the sub-atomic realm, Heisenberg's Principle of Indeterminacy regarding the properties of a sub-atomic 'particle' has suggested to some that q can involve a limited range of micro states and thereby a limited range of macro states, thereby proving the principle of strict individual determinism false, but others have contended that the Principle of Indeterminacy is a statement merely of epistemological indeterminacy and therefore does not imply any lack of ontological determinacy of q, i.e., any departure from the principle of strict determinism. The question is by no means settled in favour of ontological indeterminacy - whatever such indeterminacy could possibly mean. Quite the opposite, according to the most recent and authoritative trend in science and philosophy as referred to below in this section.

Other phenomena in the realm of physics are considered by some to provide evidence of some kind of ontological indeterminacy in the functioning of the sub-atomic realm. One of these is that of radioactive breakdown, the claim being that, because we cannot predict when a particular particle will break down, this must imply an element of ontological indeterminacy.

The argument is not valid any more than it is valid to assert that, because we cannot predict when a particular molecule of gas will pass through a hole in a container, this implies ontological indeterminacy. In such cases, the inability to predict is due to the complexity of the problem and, in the

case of the radioactive breakdown, also due to our lack of complete understanding of the forces operating. Probability rather than individual causal analysis is required in such cases as the only practical means of taking account of the phenomenon mathematically but this is not to imply that some kind of ontological rather than epistemological indeterminacy is involved. As Russell points out, the fact that there is a statistical predictability in such cases is very strong evidence that the events are occurring in accordance with deterministic laws of functioning.(2) Schroedinger describes the situation as being statistico-deterministic and denies that any form of ontological indeterminacy is involved.(3)

Certain other phenomena at the outermost fringes of scientific knowledge are also held by many to indicate that some form of ontological indeterminacy exists in the functioning of the sub-atomic realm. These are amply described by Davies (4) and Earman (5) and there is no need to detail the evidence again here since the thesis of the present study requires only a high probability that the functioning of the Universe is strictly deterministic. Such a probability is well supported by the wide range of consistent empirical evidence referred to in the present study whereas the evidence recapitulated by Davies and Earman is far more indicative of the need for further scientific research than it is of any certainty that some kind of ontological indeterminacy occurs in the functioning of the sub-atomic realm.

Honderich's 'A Theory of Determinism', previously referred to, is a recent, very comprehensive and penetrating examination of the pertinent micro and macro evidence regarding the truth or otherwise of determinism and he also joins the class of those who very strongly claim that strict determinism is a true statement of the functioning of the Universe.

Hawking, regarded as the most authoritative mathematician and cosmologist of the present day, expresses the present position powerfully. "We now know that Laplace's hope of determinism cannot be realized, at least in the terms he had in mind. The uncertainty principle of quantum mechanics implies that certain pairs of quantities, such as the position and velocity of a particle, cannot both be predicted with complete accuracy.
Quantum mechanics deals with this situation via a class of quantum theories in which particles don't have well-defined positions and velocities but are represented by a wave. These quantum theories are deterministic in the sense that they give laws for the evolution of the wave with time. Thus, if one knows the wave at one time, one can calculate it at any other time. The unpredictable randum element comes in

only when we try to interpret the wave in terms of the positions and velocities of particles. But maybe that is our mistake; maybe there are no particle positions and velocities, but only waves. It is just that we try to fit the waves to our preconceived ideas of positions and velocities. The resulting mismatch is the cause of the apparent unpredictability."(6)

As a result of his stance, Hawking joins Einstein, Planck, Schroedinger, Honderich and others in the uniquely authoritative class of those eminent personages who do not agree with the claim that any form of ontological indeterminacy occurs in the functioning of the sub-atomic realm.

The class is therefore providing very considerable support for the theory of deterministic monism and its extension, the deterministic identity theory, as outlined in the present study.

One highly significant property of the fundamental constitution of the Universe which has come to light in the scientific study of the sub-atomic realm must be noted here since it bears strongly upon the monism and commonality thesis propounded in the present study. It can also be held to imply that events in the sub-atomic realm must be evaluated on a much more universal basis than that of the localised experiments which have led to the claim that there is an element of ontological indeterminacy in the functioning of the sub-atomic realm. Those very experiments have brought to light evidence of a remarkable commonality in the relationships involved - a commonality which appears to involve the whole of the Universe in some way and which has never previously appeared in scientific experiments. The phenomenon needs to be fully explained before it would be logical to claim that the occurrence of some form of ontological indeterminacy in the functioning of the sub-atomic realm has been confirmed.

Three prominent scientists - Einstein, Planck and Bohr - were first instrumental in pointing the way in the 20th century to the theory that the Universe is a single, monistic entity or system, i.e., one structured and functioning in accordance with a single 'principle' or set of laws, the single set of functioning laws, interrelationships and interactions being limited only by the limits of the Universe whatever these might be. The theory is based upon four consistent elements; the transmutability of all forms of 'matter' and energy; the well-established quantum theory with its momentous implications as to the universal commonality of the fundamental constitution of the Universe - the so-called universal, seamless fabric of the Universe; the equally well-established theory of relativity, special and general, with its statement that the Universe is a

single entity with certain universal properties and specific overall dimensions; and the unified field theory which is strongly held in science to be reachable as a further representation of the overall monistic unity of the Universe.

The theory that the Universe is characterised by some kind of universal commonality is of course not new. It has been put forward previously in various forms, notably in Spinoza's pantheism claiming that God is everything and in the various forms of hylozoism and panpsychism which have been put forward within natural philosophy down the ages.

Scientists who have been particularly instrumental in drawing attention to the implication from the quantum theory that the Universe is a single, monistic entity structured with some kind of universal commonality or 'substance' at the fundamental level have been Schroedinger,[7] Heisenberg[8] and Bohm.[9] Davies can once again be referred to for a comprehensive treatment of the experiments and arguments. One of his telling comments is as follows; "It will be evident that there is a strong flavour to the quantum aspects of the nature of matter: interlocking levels of description with everything somehow made up of everything else and yet still displaying a hierarchy of structure. It is within this all-embracing wholeness that physicists pursue the quest for the ultimate constitution of matter and the ultimate, unified force." [10]

There is further strong evidence for the fundamental unity and commonality of the Universe and against the possibility that a form of interactionary dualism exists that involves two or more systems functioning partly or wholly in accordance with different sets of laws. Without exception, the empirical evidence indicates that everything we know about the Universe is to the effect that energy is always conserved. On this basis, interaction between 'our' system and any other system would involve either loss or gain of energy. There is no empirical evidence that any such loss or gain ever occurs.

WHat we are drawing attention to here is that the principle of conservation of energy supplements tha principles of monism and determinism, all three principles pointing in conjunction to the claim that everything knowable is part of the one deterministically functioning, totally self-contained and totally unified system which we designate as the Universe.

The significant point is that Planck's world-image, a system of logical thought first based upon such early statements as those of Euclid's

geometry and Newton's laws of motion, has grown into a system which already encompasses a body of knowledge ranging from the size of the Universe and the composition of stars and other celestial bodies to the structural, functional and holistic properties of the DNA molecule and certain remarkable commonality properties of the sub-atomic world. Yet nowhere have phenomena been found which refute the laws upon which the world-image has been constructed and successfully used to predict events which could not have been predicted other than by the processes of logical necessity in human thought precisely matching the processes of deterministic necessity in the real world. It is this predictability which has given such an aura of certainty to the world-image and has thrown such doubt upon the claim, based upon the quantum theory, that the functioning of the Universe is merely probabilistic.

We may not as yet be able to predict the future state of a complex macro system such as that of the weather or that of a complex molecular system which is subject to breakdown as recorded by a Geiger Counter but the realm of precise predictability without any evidence of ontological indeterminacy is nevertheless constantly being expanded and no evidence has appeared to prove that there is any limit to the realm.

On the basis of all the above considerations, it would strongly appear once again that logical and deterministic necessity are the two sides of a single coin - a statement which is developed further in the next section.

5.2 First state, forces, laws and necessity

A combination of astrophysics and mathematics has enabled us to establish what appears to be a very consistent and comprehensive picture, i.e., world-image, of the process of evolution of the Universe since one particular point in its evolutionary history - the moment immediately before the Big Bang, the primary plasma state, some kind of 'singularity' or whatever else is taken to be the primary state of the Universe. At that particular moment, which can be conveniently called the moment of nominal first state in that there must have been a previous state of some kind unless something can come from total nothing, forces evidently came into being which have since operated in accordance with a specific set of laws. Knowledge of those laws has enabled highly detailed and precise mathematical predictions to be made which have accorded with the occurrences of the real world.

It is here that there is almost the strongest possible evidence of co-occurrence of logical and deterministic necessity. On the one hand, the mathematical system which enables predictive exactitude to be achieved is formulated on the basis of logical necessity and, on the other, the Universe must be functioning on the basis of deterministic necessity otherwise the mathematical system would not be applicable and predictively precise as it has increasingly been found to be, both at the micro and the macro levels of investigation and prediction.

The authenticity of physics as a precise representation of the structure and functioning of the Universe, i.e., as a precise 'world-image', is therefore based upon three assumptions - that the Universe functions deterministically, that a theoretical structure constructed according to the laws of logical necessity is the appropriate basis for constructing a precise representation and that the empirical data available is adequate for the construction of that precise representation. The authenticity can fail if any one of these three conditions is not met.

However, when they are all met, they confirm each other and this is what the evidence increasingly indicates is the case in practice. Logical necessity is the mortar which holds the bricks of a meaningful theoretical structure together but that structure can only be a precise representation of the real world and enable precise predictions to be made regarding the functioning of that real world if the relationships within the real world accord with the provisions of deterministic necessity and the empirical evidence is adequate.

Logical and deterministic necessity are therefore both involved in the formulation of a precise representation of the structure and functioning of the Universe. To the extent that logical necessity is not the basis of that formulation, then the representation could not be precise and meaningful and, to the extent that deterministic necessity is not the principle underlying the structure and functioning of the Universe, then the processes of logical necessity could not enable a precise representation to be formulated. Nor could those processes enable precise predictions to be made. The processes of logical necessity cannot predict any event that is not deterministically related to past events and events which are not interrelated deterministically cannot be represented by the processes of logical necessity.

We see again that, in the case of a Universe that is functioning deterministically, logical and deterministic necessity are to each other what the world-image and the real world are to each other. The validity of the world-image as a precise representation of the real world depends upon the processes of logical necessity and the validity of the processes of logical necessity as a basis for the construction of a precise world-image depends upon deterministic necessity being the mode of functioning of the real world. In the realm of physics and natural philosophy, deterministic necessity necessitates logical necessity and logical necessity confirms deterministic necessity.

The claim that an element of ontological indeterminacy occurs in the functioning of the sub-atomic realm and that, as a result, the functioning of the macro realm is only statistico deterministic - and consequently that a perfect representation or world-image of the real world cannot be reached by the processes of logical necessity - is fraught with difficulty on several grounds, primarily that of lack of philosophical support for the concept of an event that is uncaused and that of lack of convincing empirical evidence supporting such a claim. The claim is fast losing any credibility and is increasingly being rejected by authoritative opinion as noted in Section 5.1 above.

5.3 Naive realism and determinism

Without doubt, the most obvious evidence of the truth of the principle of determinism is that to be observed in the day-by-day phenomena of naive realism. Every human being predicts a myriad times each day - predicting that his world will remain essentially the same for the next few seconds, minutes or hours etc - which it always is unless some factor intervenes that is outside his realm of knowledge or unless his own involvement is a factor in determining the future of his world. The greater the knowledge in practice, the more comprehensive and precise the prediction.

Such a situation can only be the case if the course of events follows a fully predictable path, i.e., a path which accords fully with logical and deterministic necessity. Every human being, every day, by acting on the assumption that his or her world will take a certain form at the next second, minute or hour etc is providing evidence both that the course of events is deterministic and that he or she believes, at least unconsciously, that this is the case.

More than anything else perhaps, it is the predictability that is unconsciously assumed in the realm of naive realism which provides the most compelling evidence of the truth of the principle of determinism. Yet it is in that very realm that there is least conscious acceptance of the significance of that evidence.

The most probable explanation of this paradoxical situation would appear to be that the intense reality and subjectivity of day-by-day living conditions human beings to be unaware of or to reject determinism as the account of the functioning of the human world even though that account is so widely and consistently supported by the rest of the empirical evidence.

It could, of course, be held that the predictability which is unconsciously assumed for the functioning of the human world does not extend to the process of thought and the behaviour of human beings - that the process of thought and the behaviour occur on some basis other than that of strict deterministic necessity.

Such a claim is not supported by the empirical evidence already referred to in this study. Also, any lack of logical explanation for the occurrence of any event within the realm of naive realism is always quickly noted as being a departure from the orderly and predictable course of events, indicating once again that human beings are highly conditioned to assume

that the course of events is deterministic.

In contradistinction to the above, there is the contention, by those propounding the hypothesis of ontological indeterminacy at the sub-atomic level, that the effect of such indeterminacy at the macro level of functioning of the Universe can be accounted for in probabilistic terms or is indiscernable at the macro level.

While it is theoretically possible that any such sub-atomic indeterminacy could have remained undetected to date at the macro level for one or other of the reasons given, the inescapable empirical fact is that the empirical evidence does not support the contention. The contention is not only purely speculative but is against all the available empirical evidence at the macro level.

Perhaps the most dramatic demonstration of the precise deterministic predictability at the macro level is that of the deep space probes which are communicated with and controlled many billions of kilometres away, years after launch. There is no evidence of any indeterminacy and only probabilistic functioning.

We find therefore that there is nothing significant in the world of naive realism which is such as to bring about a loss of confidence in the underlying assumption that the course of events is logically predictable,i.e., deterministic. The predictability is a prime assumption in the human outlook and, to that extent, indicates that there is a universally held, underlying - even though unconscious - assumption that the principle of strict individual determinism is true.

6.Evolution: the process of change and the changes

One derivation above all is evident from an analysis of the empirical evidence regarding the evolutionary process that has occurred on the surface of the Earth, both that observable in the evolutionary changes occurring everywhere in the world today and that observable in the geological, palaeontological, archaeological and anthropological records. This is the deterministic continuity of the process, the empirical evidence indicating that the state of the evolutionary system at any point of time is a deterministic outcome of the state at the preceding point of time. Totally inexplicable and inherently unpredictable discontinuities involving the advent or emergence of life-forms totally unrelated to previous life-forms are not to be found.

In short, according to the empirical evidence, the source of any particular form of life is always at least potentially to be found in some previous form of life or of inanimate matter, the evolution from one form to the other being brought about by natural selection or mutation and/or particular environmental conditions. If those previous life-forms or that particular form of inanimate matter had not occurred, it is apparent that neither would the ensuing life-forms.

The great diversity of species typically to be observed in the case of any genus, is particular evidence of the deterministic nature of the evolutionary process. Two cases exemplify the relationships perfectly. The first is also of great historical importance, being the diversity of species noted by Darwin on the Galapagos islands. Slightly different environmental conditions on the different islands of the group - including the environmental effect of interrelationships between the local life-forms - has produced slightly different characteristics for the various forms of life on the islands and the empirical evidence is very much to the effect that logical explanations can be found to account for the different characteristics relative to the particular environmental conditions.

The significance here is that the deterministic continuity of the evolutionary process is evidenced by the relationships. Change the environment in a particular way and the characteristics of the associated life-forms change in a particular way, thereby producing a diversity of sub-species or species. There is no evidence of inexplicable discontinuities. Each change is actually or potentially understandable and predictable from the nature of the environment which can only mean that it occurs once again on the basis of logical and deterministic necessity.

The other case of similar significance is that of the great diversity of structures of antelope horns noted by Simpson [1] as having evolved due to different local environments. None of the structures could be held to be perfect for the particular purpose involved and sometimes the structures are so specialised as to indicate the extinction of that particular species should the environment change only very slightly.

Simpson's use of the term random in analysing such a case has the significance of phylogenetic randomness - a multiplicity of phylogenetic variations with only one variation meeting the requirements of a particular environment and thereby resulting in the survival of that particular variation. The point he is stressing is that the course of evolution is not following any idealised, teleological path. None of the antelope horns is ideal for its purpose and such as to indicate that it is some kind of evolutionary path into the future that is favoured and selected by some kind of supernatural power on a non-deterministic basis.

There are, of course, a vast number of other such cases where the diversity of species can be explained in no other way than as the inherently predictable outcome of a combination of deterministic continuity, phylogenetic variations and particular environmental conditions. These phylogenetic variations are now known to include mutations as part of the evolutionary process and this has provided a first-level explanation of major changes that have occurred in the pataeontological past. Such changes are those from gill-breathing fish to lung-breathing reptiles and from cold-blooded, egg-laying reptiles to warm-blooded young-bearing mammals and thereby ultimately to the first of our hominid ancestors four or more million years ago.

Always the trend in scientific knowledge regarding the evolutionary process has been towards ever-increasing awareness that every state of the evolutionary process is sourced solely and deterministically in the preceding state. Every life-form bears a significant resemblance to some previous life-form in some important element, be it cellular construction, mode of food absorption, mode of reproduction, internal body structure or some other element and the empirical evidence, in toto, indicates very strongly that there is a single evolutionary tree of life on the Earth. Knowledge regarding this tree may not be anywhere near complete in every detail but enough is already known to enable all life-forms to be placed in positions on the tree which are at least reasonably close to being correct in terms of logical interrelationships, thereby providing evidence that the evolutionary process is deterministic and predictable. Additional empirical evidence and scientific insight continues to accumulate and the

life-forms are typically positioned ever more precisely and logically than they were previously.

The most notable and significant case of such deterministic, evolutionary relationships is that of man himself. Man today has no property which is not found in some degree in some other animal or is not a logical evolutionary development from the properties of an earlier form of mankind.

Supplementing the above outline of the later, more macro stages of the evolution of life on the Earth is the work this century uncovering an understanding of the process of evolutionary development of the most elementary forms of life from inanimate forms of 'substance'. It is from the scientific discoveries in this field that the deterministic, and therefore logically predictable, relationships between physics, chemistry, molecular and organism biology and psychology are now becoming apparent. Once again, the empirical evidence increasingly indicates that there is deterministic continuity from the most elementary forms of substance through ever more complex forms, notably those of the carbon compounds, to the incidence, under particular environmental conditions, of what appears to be the basic 'building block' of life-forms, the DNA molecule. Lectures 2 and 3 of Crick's "Of Molecules and Men' can be referred to for a comprehensive outline.(2)

Although much still needs to be discovered before a complete account is forthcoming, enough is already known to leave little doubt that animate substance is sourced solely in inanimate substance, thereby once again providing evidence which points to the deterministic continuity of all processes of the Universe and thereby also to the uniqueness of the nominal first state. On the basis of such evidence, it can strongly be held that all states of the Universe, including all states of human life, are deterministically evolved states and nothing but deterministically evolved states of that nominal first state.

The hypothesis that there is an element of ontological indeterminacy in the functioning of the sub-atomic realm and thereby only statistico determinacy in the functioning of the macro world is not in any way or degree evidenced in the field of evolution. Any such hypothesis is once again purely speculative.

7. Psychology: the outcome of the evolutionary process

7.1 General

A telling comment with which to open this particular section of the empirical evidence pointing to the truth of the principle of determinism and the deterministic identity theory is that by Hospers, "Only the psychiatrist knows what puppets people are."(1) There could scarcely be a stronger recognition of the empirical evidence that the functioning of our brains is deterministic and that the functioning - because it is deterministic - is amenable to precise description and prediction.

In other words, the realm of psychology is not in any way or degree excluded from the claim that the course of macro events is strictly and not just statistico deterministic. A human being typically believes that his or her own thinking is a matter of 'personal' decision not deterministically sourced in the past - the homuncular 'little man in the brain' syndrome - but the fallacy of the belief is evidenced by the increasing accuracy with which another human being - notably an experienced psychiatrist - thoroughly familiar with the background and psychological characteristics of the first - can predict or retrodict his or her behaviour. Such accuracy of prediction could only occur as a result of precognition or as a result of human behaviour being a deterministic function of phylogenetic and environmental inputs. The demonstrable evidence is of course all to the effect that precognition is not the process involved.

The extent of the empirical evidence indicating that this is a true statement is extensive but, once again, only a short outline is appropriate for the present philosophical study. Honderich's 'A Theory of Determinism' can be referred to for a detailed analysis of the empirical evidence supporting the claim that the functioning of the psychophysical realm is entirely deterministic. He reaches the following conclusion. "What is evidentially most relevant to the determinist theory of mind that has been propounded, to repeat, is neuroscience, a great and growing body of knowledge, theory and informed speculation. The conclusion drawn from it was that it at least very strongly supports the determinist theory. To the idea that fundamentals of present-day neuroscience must be as likely to suffer falsification as Quantum Theory in the course of history, there is the reply among others that neuroscience stands a great deal closer to data, to the facts, than does Quantum Theory. It is, because it is less speculative and greatly less far from the sensory evidence, less vulnerable."(2)

The most pertinent elements of the neuroscientific evidence can be conveniently examined under the following two headings, both involving particular relationships between the attributes of the psyche and the structure and functioning of the brain.

1. Phylogenesis
2. Condition and conditioning

There can be little said against the statement that the innate properties of the brain are derived deterministically and thereby predictably and retrodictably from phylogenetic sources if we had enough knowledge. It is well known that the chromosomes which determine all the properties of the brain with which a human being is born are determined by the genetic properties of the parents and so on indefinitely back to past generations, each genetic step in the process being entirely determined by the preceding step except to the extent that the chromosomal structure is modified by an extraneous force such as a damaging drug, radioactivity or other form of interference with the ovum, semen or fertilised ovum. However, there is no empirical evidence that the interference is not itself part of the overall deterministic process and consequently there is nothing in the phylogenetic process which indicates that the process is not deterministic.

The most striking evidence of both determinacy and identity in the relationship between past and present psychological states is surely that of the effects of age, brain damage, brain surgery, drugs or indoctrination upon the properties of the brain and thereby upon the mentalistic reportings of those properties which we know as the human psyche. A very considerable literature has been directed to detailing these effects and there can be little doubt that the properties of the brain at any specific time are a deterministic function of its history subsequent to the moment of conception. Never does there appear to be a time when the properties and thereby the psyche are not deterministically dependent upon the condition of the brain.

The redundancy which enables the brain to continue to function holistically without apparent change in the event of partial destruction, is not evidence against the validity of this statement. Holistic functioning of this type, i.e., as a single functional entity with properties beyond those of the individual parts merely assembled together, is a universal property of all life forms - sometimes within the peripheralistic confines of a constraining but at the same time facilitating 'skin' as in the case of more highly evolved organisms and sometimes without such peripheralistic

integration as in the case of an ant or bee colony. No individual cell of the human body or bee or ant ever oversees or controls the functioning of the whole complex and the complex continues to function without any apparent change in its holistic properties irrespective of the loss of a considerable number of the cells, ants or bees.

The value of redundancy of this type is great in terms of survival under highly competitive conditions of natural selection. Without it, the organism or colony would have quickly become extinct and this is more than enough justification for its occurrence in the functioning of the world of living organisms. There is consequently no case for presenting it as being significant evidence against the truth of the principle of determinism in the realm of psychology.

The empirical evidence in the realm of psychology has very largely to date been the result of work which concentrated upon understanding the sources of the properties of the brain which are reported or described as the attributes of the psyche. Freud was of course the great initiator of this approach and there could scarcely have been any other initial approach.

However, the underlying purpose of psychological analysis has increasingly been directed to changing the brain's properties and thereby the psyche and the mode of behaviour and to that extent it has been predictive and indicative of deterministic continuity in the realm of psychology. It now includes not merely the techniques of psychiatry, psychotherapy and indoctrination but, in small measure as yet, techniques of identifying and correcting, early in life, psychological abnormalities which dispose human beings to extreme forms of violence and anti-social behaviour. All such techniques are predictive and therefore indicative of deterministic continuity and relationships.

In practice, it is found that the sources of the attributes of the psyche and the mode of behaviour are always there to be discerned, analysed and understood, leading both to predictive accuracy and to conditioning - to the limits reachable by psychology, brain surgery and drugs. None of this would be possible if psychological attributes and the mode of behaviour were not deterministically related to the past and the future.

The process of conditioning the properties of the brain by indoctrination - and thereby beliefs and attitudes - is of special significance from more than one point of view. Everyone knows what is implied by the statement, "Give me a child until the age of seven and I'll have him for the rest of his

life." and the effectiveness of religious and political indoctrination in general when carried out by expert manipulators - notably in many cases parents - has been the source of many of humanity's greatest social disasters.

The techniques of psychiatry and psychotherapy may be less threatening to the world's progress and stability than religious and political indoctrination but they are no less indicative of deterministic continuity and relationships. A considerable literature is available covering these particular techniques and without doubt the most indicative of deterministic continuity is that of psychiatry, just as Hospers says. A complete exposure of the formative elements which have combined to bring about a person's particular psychological attributes is reachable by an expert psychiatrist, sometimes to the amazement and initial disbelief of the patient concerned.

The important point here is not only that the deterministic sourcing of particular psychological attributes can be ascertained but also that those attributes can be greatly changed in a desired direction as an outcome from the revelations. The sequence of cause and effect is obvious, the past clearly determining the present and the future in that past forces determine present properties of the brain and thereby psychological attributes and the techniques of the psychiatrist determine future properties and attributes.

It is appropriate at this point of the presentation of some of the psychophysical evidence to refer to statements by others which have a bearing upon the relationship between the theory of deterministic monism and the identity theory. In doing so, yet another argument pointing to the truth of the deterministic identity theory becomes evident.

The particular argument referred to is based upon the fact that almost everything which certain prominent philosophers, e.g., Strawson,[3] Ayer,[4] Bennett[5] and Hobart[6] have to say on the subject of responsibility or accountability for human behaviour is in effect a statement which supports the truth of determinism. All note that decision-making, to the extent that it is not deterministically tied to past phylogenetic and environmental forces, can only be a random, meaningless occurrence and consequently that the concept of responsibility in conventional terms would not be applicable in such a case. As Ayer puts it, "Once more, either it ((i.e., my choice or my character)) is an accident or it is not. If it is an accident, then by the same argument as before, I am not morally responsible, and if it is not an accident we are led back to determinism."[7]

What Ayer and the others are noting is that functioning of the human brain in accordance with the principle of determinism is necessary for the ascription of responsibility in any significant terms. To the extent that decision-making is not deterministically sourced, it can only be random and meaningless and ascription of responsibility in conventional terms cannot be justified.

This is a situation which, if responsibility is to mean anything at all, can only be interpreted as once again pointing to the truth of determinism.

Further, Ayer's statement is not merely a statement regarding responsibility. It is also, in effect, a statement that all human decision-making is sourced deterministically and, even more, that deterministic functioning of the brain is necessary for logical thought, logical communication and meaningful relationships. To the extent that the brain does not function deterministically, thought and communication cannot be logically related from instant to instant and relationships cannot be meaningful.

None of the above is enough to formally prove that the principle of determinism and the identity theory are accorded with in the realm of psychology but the empirical evidence supports that interpretation far more than any other.

It has been claimed that the effect of the quantum upon the course of human behaviour lies below the level of observability and therefore confirmation or refutation. However, the inescapable fact is that there is no empirical evidence whatsoever - either in brain processes or in felt experience - to indicate that small effects of quantum dimensions play any part in the course of functioning of the brain and the opposing argument is totally without empirical support. Once again, it is the increasing predictability of human thinking and behaviour that is the substantial and significant factor and the opposing claim is little more than a clutching at straws to support a philosophical stance.

It would increasingly appear that one can justifiably rephrase one of Newton's laws and say that every human being always thinks and behaves in a specific, predetermined way unless conditioned by a new force to change that way. In other words, every human being is totally and always a prisoner of the past.

7.2 Self-hood and intersubjectivity

Descartes' statement, "I think therefore I am." can be held to have given authoritative standing to the commonly held belief that self-hood or I-ness involves the existence of some kind of homuncular entity - Descartes' "I" - which exists apart from the body. The belief is of course contrary to the identity theory and is one reason why the theory has gained little conscious acceptance within even philosophical and scientific circles. The identity theory 'goes against the grain' of the sense of self.

However, the empirical evidence indicates that the occurrence of the processes of cognitive consciousness of the external world on the one hand and a sense of self as a further development of cognitive consciousness on the other proves nothing other than that the brain has memory, sensory and cognitive powers which enable it to discern and interpret the existence of the external world - including that part of the external world which is the human body. The occurrence is an outcome of the phylogenetically sourced capabilities of the brain and of sensory interrelationships between the brain and the external world.

In particular, there is the empirical evidence which indicates that the mentalistic state of the brain which is the sense of self is closely related to the condition of the brain, both as regards the effects of age and the effects of damage, surgical operation and drugs. Gardner's work is particularly informative regarding the extent of this relationship and in clarifying the distinction between mere cognitive consciousness and its extension, the sense of self. His extensive experience in the realm of brain damage and surgical modification has led him to the conclusion that "Owing to these and other deficiencies, the frontal-lobe patient ((i.e., the patient who has lost the use of the frontal lobes of his brain)) - even while scoring inpressively on objective tests of skills and knowledge - strikes us instantly and intuitively as bereft of a sense of self, unconscious of his life, deprived of a metaphor in which his activities and his worth are recorded, or at least of the ability or the incentive to consult this record."(1)

Gardner compares such a patient with other patients who have retained the frontal lobes intact while "being crippled in so many of the sensory and motor capacities." He notes that, in such a case, "His sense of self, his concern about what he can and cannot do, his ability to confront and make decisions, have been diminished little if at all." and that "It is because most aphasic patients retain their frontal-lobe structures that they, too, even when paralysed and almost mute, retain the dignity of the sense of

self."[2]

It is to be noted here that such a highly localised and close relationship between the brain with frontal lobes on the one hand and cognitive consciousness with the sense of self on the other is evidence that supports the identity theory rather than substance or property dualism. Such a localised, close relationship between the 'mental' and the 'physical' is contrary to the basic assumption of both forms of dualism that the mental and the physical involve either separate substances or separate properties, these standing in different relationships with the external world and therefore differently affected by change either in the interrelationships with the external world or change in the internal structure or functioning of the brain as in the case of the loss or lack of development of the frontal lobes.

There is further empirical evidence against any attempt to argue on a priori grounds that the sense of self is indicative of the existence of some kind of homuncular 'self', fundamentally independent of the body and thereby indicative of the falsity of the identity theory.

One element of this further evidence is that of the historicity and evolutionary sourcing of the psychological attributes of human beings. The mode of becoming should be of vital concern in the formulation of any theory of the fundamental properties and significance of human existence. To attempt to explain that existence as if the world had been put into place overnight exactly as it is today and without the billion years of evolutionary development from the most elementary life-forms of the past is to side with creationist fantasies.

The empirical evidence indicates that the reality of the position is entirely different and the difference can be held to be of considerable significance in formulating an explanation of the incidence of the mentalistic reportings of the properties of the brain which we describe as cognitive consciousness of the external world and its extension, a sense of self. In particular, the evolutionary picture is one of exceedingly slow incidence and development of the complexity of the brain's properties and thereby the psychological attributes of human beings. At no point in the palaeontological record of the past four million years is there evidence of an overnight incidence of any particular psychological attribute and it can only be concluded that the incidence of a sense of self is nothing other than a further evolutionary development following upon the evolutionary development of the cognitively conscious, 'raw feel' properties of the brain which human beings have in common with all other animals.

Sellars has put together a plausible picture of how the sense of self first appeared as an outcome of the evolution of the properties of the brain.[3] This can be summarised here as evolutionary development from the earliest form of non-verbal communication to the incidence of elementary overt speech, from more developed forms of overt speech to 'inner speech', i.e., thoughts without corresponding overt speech; then from thoughts and overt descriptions about others, e.g., "He is sick." to thoughts and overt descriptions about oneself, e.g., "I am sick." It could be expected that a sense of self would be the ultimate outcome of the process, provided that adequate conceptual power had also developed in the frontal lobes of the brain where that power is now known to be located. It would be surprising and illogical to acknowledge the occurrence of sensory power, interpretative power, speech communication and conceptual power in the human animal and not expect that combination to bring about conclusions regarding the animal's own place in the world.

However, to know that the brain processes which have led to cognitive consciousness and subsequently a sense of self are not indicative of any dualistic significance is not the whole story. There is still a need to position them in depth in an appropriate setting and, for this purpose, the mode of incidence can be examined along the lines followed by Sellars. Considerations of major importance are revealed in doing so.

The most important of these by far is the relationship between intersubjectivity and the development of the brain's properties and thereby the attributes of the human psyche - in particular, the incidence of the sense of self as a highly evolved element of the human psyche. Several writers have drawn attention to the need for interrelationships between the brain and the world external to the brain before psychological attributes of any 'personal' significance can occur at all, the history of such thinking going back to the assertions by Locke and Rousseau as to the mode of acquisition of psychological attributes, i.e., personality traits, and being continued today in the works of such writers as Sellars, T.Nagel and Gardner.

Not that all such writers follow precisely the same line of argument. Locke and Rousseau write only of the close relationship between the formation of the psyche and the forces which condition that formation, the implication being clearly that there would be only extremely limited formation if there were no external determining forces whatsoever. Cognitive consciousness as consciousness of the external world and of interrelations with that external world and, without doubt, a sense of self

would then presumably be very largely non-existent, suggesting once again that the human psyche has no inner stand-alone ontological significance in its own right.

Sellars, Nagel and Gardner develop this assertion of the essentiality of the relationship between intersubjectivity and the development of the human psyche further and the importance of the relationship is more than enough justification for quoting their most pertinent and informative statements here.

After putting forward his very plausible story of how our ancestors - whom he individualises in the person of a fictitious man, 'Jones' - came to acquire a sense of self and other such 'personal' attributes, Sellars makes the following statement "As I see it, this story helps us to understand that concepts pertaining to such inner episodes as thoughts are primarily and essentially inter-subjective, as inter-subjective as the concept of a positron, and that the reporting role of these concepts - the fact that each of us has a privileged access to his thoughts - constitutes a dimension of the use of these concepts which is built on and presupposes this inter-subjective status."(4)

One of Nagel's statements is pertinent to this exposition of the importance of intersubjectivity in the formation of a 'person'. "There is still another point: many intensional predicates do not just ascribe a condition to the person himself but have implications about the rest of the world and his relation to it. Physicalism will of course not require that these be identical simply with states of the person's body, narrowly conceived. An obvious case is that of knowledge, which implies not only the truth of what is known but also a special relation between this and the knower. Intentions, thoughts and desires may also imply a context, a relation with things outside the person. The thesis that all states of a person are states of his body therefore requires a liberal conception of what constitutes a state - one which will admit relational attributes."(5)

Nagel is less sweeping than Sellars in pointing to the importance of interrelational conditioning in the coming into being of a 'person' but there is no doubt about the strength of his claim that intensional predicates of a particular subject are a function of the conditioning of that subject and consequently that what a person is, and what the state of a person is - his intentions, thoughts and desires - is a function of interrelationships with the particular environment which the person has been subjected to up to that particular point of time.

Gardner's extensive study of the effects upon the human brain, and thereby upon the human psyche, caused by injury or surgical operation to the brain provides direct empirical evidence regarding the particular nature and extent of the relationship. He concludes that the evidence does not support the dualistic homunculus theory but that "Careful examination of human development suggests instead, that the formation of the sense of self, of the feeling of a 'mind' in touch with and in command of an individual's behaviors and actions is a bootstrap operation, one aided by peers, by the language, by the surrounding culture, indeed by the individual's total interaction with the world."(6)

A special case of the evidence indicating that the human psyche is much more of an intersubjective than a subjective phenomenon is that of Helen Keller.

When Anne Sullivan first tried to bring the external world into communication with the brain of the deaf, blind and dumb human organism that was to become Helen Keller, there was no response whatever to indicate that the organism was any kind of 'person'. At that stage, Helen was merely a functioning organism in the class of organisms to which plants and colonies of ants and bees belong. All bodily functions were occurring normally but there was no evidence of the existence of a holistic 'person', only the occurrence of two gestures to convey to the external world her need for food or drink.

Anne Sullivan tells of how, after many futile attempts to establish some kind of communication with 'Helen', she finally succeeded. She impressed a meaningful language, that of a finger alphabet, upon Helen's remaining sensory faculty of potential value to communication - touch. In this way, she was able to substitute finger for spoken words and the feeling of an object for the sight of it. Helen's subsequent acquisition of a vocabulary and finally of conceptual thought was unbelievably fast in the judgment of that brilliant naturalist, Konrad Lorenz.(7)

Nevertheless, what we must be careful not to assume here - the age-old homuncular and dualistic delusion - is that 'Helen Keller' was in there somewhere just waiting to appear once the door was unlocked. There was only the potential for a person, Helen Keller, to take form. No Anne Sullivan and there would never have been a person, Helen Keller, at any time - only a biological, almost totally non-psychological organism.

Ascription of any kind of homuncular independence under such highly limited conditions is, to say the least, highly questionable and, if it is

highly questionable under such conditions, then its supposed dualistic significance under fully developed conditions can be given little credence. That which is acquired merely by phylogenetic and environmental inputs cannot have fundamental dualistic significance. The only element in such a situation that is fundamentally significant would appear to be the capacity of the brain to acquire properties which are reportable as parts of the human psyche and this is a property of the fundamental constitution of the Universe, not a property of some kind of dualistic self.

As Lorenz notes, following Darwin, Chomsky and Eibl-Eibesfeldt in particular,[8] that potential capacity is innate in the human race to an enormous degree now - as was evidenced by the rapidity with which Helen Keller acquired an extensive vocabulary and understanding of a whole culture. In Lorenz's words, "We do not learn to think, we learn the symbols for things, like a vocabulary, and the relationships between them. What we have learnt we then set into a preformed framework without which we would be unable to think - indeed, without which we would not be human beings at all. But there are hardly any circumstances that illustrate the presence of these various mechanisms so vividly as the simple and completely unbiased description for which science is forever deeply indebted to Anne Sullivan."[9]

Although it could be held that this innate capacity could be explained equally validly on dualistic grounds, the evolutionary and biological evidence indicates that determinism and monism is a more logical description of the situation, i.e., that the innate capacity of the human brain for learning and understanding is an evolutionary-sourced property attached to the organism, man, as a particular biological/psychological property. Thus the person that Helen Keller finally became was an outcome of the interplay between the particular innate properties of her brain and the particular intersubjective sensory inputs to her brain. Different innate properties and different sensory inputs would have produced an entirely different person, ranging over the whole spectrum of the human race.

The empirical evidence is therefore very much to the effect that a 'person' is a biological/psychological state of the body and not anything else. Helen Keller was not a person until she became such in the course of Anne Sullivan's providing a path for the forces of intersubjectivity to take effect in combination with the innate properties of Helen Keller's brain.

Lorenz gets down to the ontological 'root' of things when he makes two very meaningful statements in the same genre as those above. "Everything we know about the material world in which we live derives from our

phylogenetically evolved mechanisms for acquiring information, mechanisms infinitely more complex than those which elicit the avoidance response of the paramecium but developed according to the same principles."[10] Also, "The simple answer is that the system of sense organs and nerves that enables living things to survive and orientate themselves in the outer world has evolved phylogenetically through confrontation with an adaptation to that form of reality which we experience as phenomenal space. This system thus exists a priori to the extent that it is present before the individual experiences anything, and must be present if experience is to be possible. But its function is also historically evolved and in this respect not a priori."[11]

The latter statement is particularly meaningful along the line taken within the present study. As Lorenz says, all human 'experience', i.e., all states of cognitive consciousness and a sense of self, follows upon the evolution of mechanisms which are capable of having that experience. These mechanisms have evolved from more elementary mechanisms and the more elementary mechanisms from even more elementary mechanisms down to the most fundamental properties of the Universe, whatever they were at the time of the nominal first state.

This is a corollary of Lorenz's statement by merely extending the 'historical' term of his statement to its ultimate monistic and deterministic base. Once one concludes (following Lorenz) that innate properties of the brain are evolved properties of more complex forms of the fundamental 'substance' of the Universe and occur only in gradual measure as those more complex forms evolve into existence, there is little justification for claiming that the occurrence of any property of the brain and thereby any psychological attribute is evidence of the occurrence of any form of independent homuncular entity.

Yet again, it must be concluded that the human psyche is a deterministic product of the properties of the fundamental constitution of the Universe and of nothing else.

7.3 The incidence of 'human' emotions

Little has been said as yet to account, in terms of determinism and monism, for the incidence of the emotions which are also a mark of the human psyche - aspiration, joy, despair, devotion, etc, and three others, awe, religious feeling and sadism, which are perhaps the only emotions unique to man since all others clearly appear to also be attributes, in some degree, of some other animal. Lorenz is notable among those who tell us something of the emotions which motivate other animals and the evidence should shake the confidence of anyone who claims that human beings are something fundamentally above the animal world.(1)

Awe, religious feeling and sadism could well be held to be unique to human beings but this is scarcely to establish any kind of divine significance to man. The evolutionary history of the animal world shows the evolutionary process operating on both the capacity to reason and to feel and there is no empirical evidence supporting any claim that the occurrence of awe, religious feeling and sadism is not just another stage in the evolutionary process. The evolutionary development of the human capacity to reason is well revealed by the palaeontological evidence extending over the past four million years and highly significant steps in the evolution of emotion are also shown by the palaeontological evidence - that of the first ritualistic burial customs around 100 000 years ago(2) and, even more significantly perhaps, that of the burial of an adult invalid who could not have survived without the care of other members of his group.(3)

The palaeontological evidence of man's attributes prior to 100 000 years ago reveals nothing of any such emotional content. All the evidence is to the effect that earlier man was driven only by the same forces as drove every other animal - food, shelter, sex and the protection of the young.

Some, of course, might claim that the time of incidence of the first ritualistic burial customs and the first caring for the welfare of others was the time when man was first imbued with the 'divine' spirit and became something above the animal world but other empirical evidence does not support such a claim. In particular, it would appear from that evidence that man is the only animal with highly developed sadistic tendencies - enjoying the discomfiture and pain of others. Even some forms of comedy depend largely upon this attribute of human beings and history is full of the more savage forms - victimisation and sadistic treatment of the weak by the strong in every possible and conceivable way and there is little evidence of any change even after many millenia of so-called civilisation. The drifting smoke from the ovens and the living

scarecrows of Belsen, Auschwitz, Dachau and other German extermination camps are stark evidence of that and one does not have to look beyond the thuggery and viciousness in one's own community for other evidence.

Man's psyche today has the attributes of caring, awe and religious feeling but it still retains much of the characteristics of his past struggle for survival. Violence was necessary for that survival during his evolutionary past - the more effective the killing, the more certain the survival - and it is still very much part of his psyche today so any contention that he was imbued 100 000 years ago or at any other particular time with any kind of divine spark must take account of the failure at that time to imbue him with a full measure of kindness and concern for the welfare of others. Self-interest - either during life or in some supposed hereafter - rather than concern for the welfare of others, continued to be his most dominating attribute.

More logically, the incidence of ritualistic burial customs and caring for the welfare of others can be explained as a predictable outcome of the process of natural selection. The animals which survived during the competitive evolutionary process were those with advantages relative to other animals under the particular environmental conditions appertaining at any given time. One of those advantages, particularly for animals which are at a competitive disadvantage as individuals - and man was certainly one of these - was to function as a group. Lions and wolves are other examples.

Under such conditions, personal welfare could well have become identified with group welfare to an extent and group welfare could well have become identified with concern for other individual members of the group. Species and groups which did not have this further competitive advantage would have died out.

This concern for the welfare of other members of a group is to be seen today in the case of other animal forms which function cooperatively, e.g., dolphins and killer whales, and man cannot claim any uniqueness for his own characteristic of caring for the welfare of others.

In the case of awe and religious feeling, a plausible explanation of their incidence in the evolution of man would appear to stem from the incidence of curiosity in the human psyche. Curiosity would have been a natural selection advantage in that it led to new means of survival and it has become a phylogenetically sourced innate attribute of higher animal forms, quickly appearing in the psyche of the young. With such an innate

drive to explore and understand the functioning of the world, the vastness of the unknown in the extent of time, in the extent of space and in the extent of the mystery of our being could not have failed to impress sooner or later and to be consciously aware of vastness is the essence of awe. Also, to be consciously aware of one's own existence in the face of the limitless unknown is the essence of religious feeling.

It is more difficult to find a logical explanation for the incidence of sadism in the functioning of the animal world yet a plausible explanation needs to be found to account for the incidence of sadism in the human psyche that does not imply a dualistic irreducible source. At some point in the evolution of mankind, circumstances occurred which led to the incidence of sadism and it should therefore be possible, in accordance with the principles of determinism and monism, to explain that incidence logically in terms of the evolutionary process.

Once again, we are drawn to the nature of the evolutionary process for a likely explanation. The drive to survive was the primary motivating force throughout the whole course of animal evolution until man became an agricultural being some 10 000 years ago and survival thereby became assured as far as food supply was concerned for the first time in man's evolutionary history. Until that development, it was the actual survival that mattered to the animal and there was nothing in the situation to bring about sadistic enjoyment of another animal's pain. Satisfaction was complete when the means of survival was effected and the sooner the effect, the sooner the satisfaction. This is well-known to be the situation 'in the wild' today; animals kill their prey quickly and do not prolong the process.

It could perhaps have been expected that a bountiful, agricultural way of life with its much greater survival value would have led to more benign and mutually beneficial relationships but evidently not so. The competitive drive - honed and intensified during millions of years of natural selection - was not to be evolved out of the human psyche in a mere 10 000 years of societal cooperation. Clearly, it has remained and appears not only in the readiness of mankind to resort to blood sports such as bull-fighting and fox-hunting for enjoyment and to violence and war as the means of settling disputes or gaining an advantage but also in the characteristic drive for power over other human beings and other animals - and sadism would appear to be an extreme form of expression of that power.

On this interpretation, it would appear that the incidence of sadism in the human psyche was a consequence of the frustrations imposed by the

security of agricultural life upon the human animal which had acquired a highly pronounced disposition towards violence and the exercise of power over enemies and prey during the course of evolutionary natural selection over millions of years. To inflict pain sadistically upon another human being or other animal is to pander to that disposition when there is no longer any other means of doing so. We are all victims of our evolutionary past.

What we have been briefly arguing above is that no human emotional attribute can be held, on the available evidence, to be indicative of the incidence of any kind of emergent, irreducible 'divine' property of man as compared with other animals. Only awe, religious feeling and sadism appear to be unique to man but it would appear that the incidence of these can be plausibly explained on an evolutionary basis. There is certainly no case for claiming that any other emotional attribute of the human psyche is unique to man, all other kinds of emotional attributes being found in some other animal, even though in lesser measure, and it is 'kind' that is significant, not 'measure'.

We can only conclude that the empirical evidence is very much to the effect that no human emotional attribute is unique to man in any way which indicates it is an irreducibly emergent or supervenient attribute, not sourced deterministically in the past and thereby, ultimately, in the nominal first state.

PART IV THE DETERMINISTIC IDENTITY THEORY

8. Concept and content

8.1 Introduction

PART II of the study was very largely an evaluation of the analytic edifice that is put forward in support of the traditional Identity Theory. It led to the conclusion that the theory, although of considerable value in acquiring an understanding of the meaning of the statement that a 'mental' state is identical to a 'physical' state and in arguing that the statement is not false a priori, nevertheless is neither complete nor convincing as to the truth of the statement. This is evidenced by the various points of dissent expressed by many philosophers, such as Armstrong,[1] Kripke,[2] Boyd,[3] Popper,[4] Shaffer,[5] Davidson,[6] C.Campbell,[7] Stevenson[8] and Dennett[9] etc.

PART II also evaluated the most prominent analytic objections and found no reason to reject the theory on the grounds of any of the objections.

PART III referred in short measure to the pertinent empirical evidence but extended only marginally into the realm of hypothesis and metaphysics based upon that evidence.

PART IV goes further. It takes account of the content of PARTS II and III and attempts to derive a comprehensive and compelling theory of consciousness, being and knowable reality based upon both the analytic arguments and the empirical evidence presented in those parts. Section 8.1 is directed to recapitulating and further developing the most significant conclusions reached as an outcome of the arguments and evidence i.e., that the Universe is a single entity or system, functioning deterministically and sourced entirely and solely in the nominal first state and that a 'mental' state is identical to a 'physical' state.

The concept of the nominal first state was introduced in order to truncate considerations of the evolutionary process to a particularly significant point in ontological time and thereby enable the study to concentrate upon the realm of which science has appreciable understanding. The point taken on this basis was that immediately preceding the Big Bang, the primary plasma state, a 'singularity' or whatever else is conventionally taken to be the primary state of the Universe.. At that point, it would appear from the scientific evidence that the constitution of the Universe was a single, universal 'substance' or force ((This alternative is hereafter usually

designated solely as 'substance' but implies all possible forms of energy.)) which has since changed and evolved in accordance with certain deterministic laws of change.

On this basis, the evolution of the Universe subsequent to the nominal first state was held to be the deterministic, non-emergent and non-supervenient evolution of states of the fundamental substance and the accompanying evolution of the properties of the fundamental substance when in the various states. According to this line of argument, the various states include all the localised or nodal concentrations of the fundamental substance which we know as a wave/particle, a quantum of radient energy, a molecule, a cell, a plant, an animal, a planet, a solar system and a galaxy etc etc and also include all the states of the part of the Universe which is designated as a human being.

The particular statements above are the framework within which any theory of the relationship between a mental state and a physical state must be set, according to the line of argument. In particular, it was concluded that all parts of a deterministically functioning, monistic system stand always in a deterministic relationship with each other. Separate streams, e.g., separate streams with distinctive mentalistic and physicalistic substances or properties, could occur, functioning in accordance with laws which, although different from each other on some distinctive basis, are nevertheless part of the one overall deterministic set of laws.

It was noted in the study that Honderich is one who has propounded such a theory, based, in his case, upon the truth of determinism and the division of properties into the 'mental' and the 'physical'. He attempts to reconcile strict individual determinism, property dualism as involving separate mentalistic and physicalistic properties of the brain - closely correlated but causally interrelated - and universal commonality of some kind as a corollary of the truth of determinism.

Honderich's theory, which he has called the Union Theory, therefore accords with two of the definitive elements of the deterministic identity theory as expounded in the present study, i.e., (1) that the functioning of the Universe is totally deterministic and monistic and (2) that individuality is a transient state, the eternal reality being that of some kind of universal commonality.

It is in his claim - and the claim of many other philosophers today - that the 'mental' and the 'physical' are separate properties of the 'material' of

the brain, closely correlated and causally interrelated, that Honderich's theory differs fundamentally from the deterministic identity theory and it is this difference which has been one of the crucial questions and subjects of investigation in the present study. The other has of course been that of the probability of the truth of strict individual determinism.

The investigation as to the credentials of the identity theory as compared with those of property dualism was carried out, firstly, by evaluating the analytic arguments previously put forward as to whether or not the identity theory is false a priori, secondly, by attempting to strengthen the analytic case arguing that the identity theory is not false a priori, and, thirdly. by evaluating the pertinent empirical evidence as to the relationship between a mental state and a physical state.

It was concluded that the following three statements are well justified;

(1) The most prominent analytic objections to the analytic arguments put forward by the traditional identity theorists in support of the identity theory are not convincing.

(2) A definite and significant difference of meaning between the terms of the statement of identity of a mental state and a physical state is provided by the distinction between the mental being known a priori and incorrigibly and the physical being known only a posteriori and contingently. On this basis, the meanings of the terms of the statement of identity of a mental state and a physical state are clearly and significantly different, the statement of identity is a contingent statement involving different modes of picking out the referent - in this case the brain - and the statement of identity cannot be held to be false on analytic grounds. Its truth or falsity can be established only empirically.

(3) The empirical evidence is all to the effect that nothing more is required for the occurrence of a particular mental state than the occurrence of a particular physical state. In other words, there is either an identity relationship between a mental state and a physical state or such a close correlation of the two states that any independence is totally undetectable under all conditions of occurrence and therefore indistinguishable from an identity, totally non-causal relationship. Such an alternative is purely speculative.

It was concluded from the above considerations that the probability of the truth of a theory which takes account of both determinism and the

identity theory is much greater than that of any alternative and the resulting theory - designated as the deterministic identity theory - is explicated in the following sections of the study.

8.2 The deterministic identity theory: a total theory

We are now in a position to state specifically what is the content of the deterministic identity theory.

The deterministic identity theory states that the fundamental constitution of the Universe is a single, universal 'substance' or force; that the structure and functioning of the Universe accords with the principles of monism, determinism and conservation of energy; and that a 'mental' state of a part of the Universe is identical to a 'physical' state of that part, the mental state being picked out and known a priori and incorrigibly and the physical state being picked out and known a posteriori and contingently.

The essential point is that the Universe is a single, deterministically functioning entity or system, structured fundamentally on the basis of some kind of universal commonality, and that the occurrence of a particular mental state of a part of the Universe, i.e., any of the 'experiences' thought, desire, fear, pain, sense of self etc in the case of a human being, is identically the occurrence of a particular physical state of that part. The two states are nothing other than different modes of picking out, reportings, meanings and knowings of one and the same referent, the ultimate reality being in the fundamental properties of the Universe which give rise to those particular modes, reportings, meanings and knowings and in nothing else.

The deterministic identity theory differs from the traditional Identity Theory significantly in that it is a prime element of the deterministic identity theory that the mentalistic reporting of the holistic properties of the brain is reducible, in the ultimate, to reporting the mentalistic properties of the substance that is the most fundamental level of the brain's constitutional hierarchy. It is this particular relationship to the fundamental substance of the Universe which, together with the principles of monism, determinism and conservation of energy, transforms the deterministic identity theory from being merely a theory of the relationship between a mental state and a physical state to being a total theory of consciousness, being and knowable reality.

It is a total theory - making statements about the fundamental structure and functioning of everything that exists as a knowable part of the monistic entity that is the Universe, about the peripheralistic world of naive realism of which we are a part from day to day and about the relationships between the fundamental and peripheralistic worlds. There

is no realm of knowable reality or field of philosophical or religious concern which is beyond its scope or relevance.

In accordance with the analytic arguments, the empirical evidence and the deterministic identity theory derived from those arguments and that evidence, the key to acquiring a much more comprehensive understanding of everything knowable would therefore appear to be twofold; (a) recognising that the Universe is a totally deterministic and monistic entity or system and (b) recognising that a mental state is a particular state of existence of a particular part of this monistic entity or system and not some kind of irreducible supervenient or emergent and implicitly dualistic entity or property, exclusively associated with human existence. We must diminish our appraisal of ourselves at the peripheralistic level in order to understand ourselves more thoroughly and comprehensively at more fundamental levels.

In the case of (a), the state of the Universe at any time - including the state which is characterised by the occurrence of human beings - is an evolutionary outcome from the nominal first state. From the properties of that nominal first state, all subsequent states have deterministically evolved according to the theory - common as in the case of the gaseous mass which the evidence suggests was the Earth at the time of its initial formation, communal as in the case of ant and bee colonies and composite as in the case of animals and plants. The nominal first state was the source in all cases and all cases are nothing other than different facets of the state of the Universe at any particular time.

In the case of (b), an individual human 'person' is an integral part of the Universe and can be nothing more in the case of a totally monistic and deterministically functioning entity. Personal significance or lack of personal significance is then the significance or lack of significance of the Universe and there is no basis for ascribing any kind of irreducible significance to human existence. Either the Universe is a totally monistic entity or system functioning in accordance with the one 'principle', i.e., set of laws, or it is not. If it is such an entity or system, all forms of knowable dualism involving systems functioning in accordance with fundamentally different sets of laws are axiomatically refuted and the fundamental significance of being can be found in the fundamental significance of the Universe and not in anything else.

A particular consequence of the above statements is that a human being does not 'possess' states of consciousness and states of being. T.Nagel has

seen fit to make this point in terms of the occurrence of pain; he denies that there are two referents - one the person and the other the pain, with the person possessing the pain.[1] He is here identifying an important element of the deterministic identity theory but, once again, is only touching the fringe of the total theory. A 'person' does not possess pain, thought or any other form of consciousness according to the theory. The person is those experiences and sensations as impressed upon some kind of 'ground-stuff', as Schroedinger calls it, and which we can take here to be the unfashioned or unmarked and therefore unpersonalised state of the brain. Those experiences and sensations are intrinsic in what a 'person' is. When they do not exist then neither does the person.

Hume is one who had something of a grip upon this particular interpretation but even he speaks, in a well-known statement, in terms of a person experiencing rather than of the experiencing being the person. "For my part, when I enter most intimately into what I call myself, I always stumble on some particular perception or other, of heat or cold, light or shade, love or hatred, pain or pleasure. I never can catch myself at any time without a perception, and never can observe anything but the perception. When my perceptions are removed for any time, as by sound sleep, so long am I insensible of myself and may truly be said not to exist. And were all my perceptions removed by death, and could I neither think, nor feel, nor see, nor love, nor hate, after the dissolution of my body, I should be entirely annihilated, nor do I conceive what is further requisite to make me a perfect nonentity."[2]

Although Hume speaks constantly here in terms of a personalised 'I' having the perceptions, it is clear that his underlying intention is to reject the claim that the perceptions are possessed by a person. Elsewhere, in the same work, he makes this point clear. "I may venture to affirm of the rest of mankind, that they are nothing but a bundle or collection of different perceptions, which succeed each other with an inconceivable rapidity, and are in a perpetual flux and movement."[3]

Which is not to say that there is not something - a part of the Universe - which exists and is changed in some way by the afferent sensory inputs. It is a matter of logical necessity that there must be such a something within the realm of the monistic entity that is the Universe or we would, once again, have to conjure up some kind of dualistic entity or realm which is affected by the inputs. There is no empirical evidence of this.

As stated above, the part of the Universe that exists and is changed by the afferent inputs - Schroedinger's 'groundstuff' - is of course the brain. But

there is nothing in the situation which indicates that the brain is a person that reacts to the inputs; the empirical evidence is all to the effect that a person is the form which the reaction to those inputs takes - without the inputs, there is no reaction and no person, only a human organism with the potential for personhood.

On this basis, two elements are necessary for the occurrence of a particular person; the particular, evolutionarily sourced ground-stuff with all the innate capabilities which have come down from previous generations and pre-life forms of the fundamental substance of the Universe, right back to the nominal first state; and the afferent sensory inputs which condition the ground-stuff with the effects of all the environmental forces which operate upon a particular individual at a particular point in the evolutionary process - parental, educational, peer and cultural. Both elements are necessary for the occurrence of a person and no person eventuates if either of the elements are missing.

Under these conditions, a 'person' is the reporting of a particular set of properties of a particular, evolutionarily sourced part of the Universe - the brain - after the afferent sensory inputs to the brain have taken effect. The reporting includes the reporting of the particular set of properties of the brain when frontal lobes are an effective integral part, the reporting then being the sense of self.

The point here is that, in the case of a deterministic, monistic entity, all properties and states are outcomes of the deterministic evolutionary process and are therefore evolved properties and states of the fundamental substance or force of the Universe. It is a totally self-contained and totally deterministic process and the occurrence of a particular person is therefore an outcome of a deterministic evolutionary process. This involves, firstly, a large number of steps including the evolutionary past of the Universe from the nominal first state up to the point of occurrence of the fertilised human ovum - containing within its chromosomal and DNA structure an implant of both its phylogenetic history and directive growth control for the future states of the organism; secondly, biological growth of the human organism up to the point of birth including conditioning of the organism by inputs from the environment within the mother up to that point; and, thirdly, biological growth subsequent to birth and conditioning of that growth by sensory inputs from the external world. The outcome - a human person - is a product of phylogenetic and conditioning forces and of nothing else and, consequently all the attributes of a human person are also a product of phylogenetic and conditioning forces and of nothing else.

In sum, it follows from the above considerations that a person can only be a product of the deterministic process; he or she cannot be a power or an entity outside that process.

The sense of self that is the reporting of the properties of the brain with effective frontal lobes also needs to be clearly placed within the context of consciousness and being according to the deterministic identity theory if we are to reach a comprehensive understanding. Some philosophers have been baffled by the thought that the world could apparently function exactly as it does, even though cognitive consciousness to the point of occurrence of a sense of self was completely absent from the scene.

The position according to the deterministic identity theory is that a world could certainly exist and function without the occurrence of cognitive consciousness to the point of a sense of self - indeed that life on the Earth was such a world until the processes of evolution brought about higher animal-forms with properties of the brain reportable as being a sense of self.

However, the Universe as it actually now is, is obviously not such a world. There is now one highly significant a priori certainty - the existence of something that is cognitively conscious to the point of self-awareness - Descartes' 'I think, therefore I am.' in different terms. Everything else is reached only by contingent physicalistic reportings and only to the extent possible within the constraints of the deterministic process.

Hence, according to the analytic arguments and the empirical evidence, all forms of cognitive consciousness i.e., emotions, thought and a sense of self, are products of the deterministic process exactly as everything else. They are indicative only of the fundamental properties of the Universe and not of the existence of any entities fundamentally independent of the deterministically functioning, monistic entity or system that is the Universe according to the deterministic identity theory.

8.3 Holism, panpsychism and commonality

The deterministic identity theory is a statement of the fundamental structural and functional properties of the Universe and of the relationship between the 'mental' and the 'physical'. Although such a theory impacts upon every other element of human knowledge, it is essentially only a framework and, for a comprehensive understanding of all the properties of the Universe, it needs to be 'fleshed in' with a great deal of further analysis.

One of the most important questions requiring attention is that of the relationship between the properties of the most fundamental realm - whatever that is - and those of the micro realm and the macro realm that brings about the holistic properties of particular parts of the macro realm which are reported as mentalistic and which thereby provide evidence for the statement that the Universe is a panpsychic entity in commonality and reductionist terms.

One point is of major importance in our search for an answer - or even a mode of approach - to this question. When we consider the historical and evolutionary sequences that invariably lead back deterministically to the nominal first state according to the empirical evidence, there is no escape from the conclusion that the sourcing of holistic properties which can be reported or described as mentalistic lies in the properties of the nominal first state and that every state of the Universe since that nominal first state must equally be the source of such properties.

Which means that panpsychism, if defined in monistic and reductionist terms, is an appropriate term with which to designate the fundamental constitution of the Universe.

It has been claimed that the theory of panpsychism is obviously questionable in that the theory implies that inanimate objects are conscious but the implication does not follow from the theory if this is defined in monistic and reductionist terms. The state of physicalistic occurrence of an individual object, e.g., a human being, that is identically a state of consciousness can involve other fundamental properties of the Universe and only occur when the juxtaposition of properties is such as to bring about that state. Whether or not the state of consciousness occurs for states of physicalistic occurrence of parts of the Universe other than that of human and other animals is a question which is very probably unanswerable by beings whose range of knowledge is limited to that reachable by the deterministic process.

All that can be claimed with confidence is that, if the Universe is entirely a deterministic and monistic entity and if consciousness occurs as a state of part of the Universe at any level or in any form, it must be reducible to a state of that part at any other level or in any other form. It is not a corollary of this position - and thereby of panpsychism - that consciousness must be a state of occurrence of every object, inanimate or animate, any more than any other characteristic of any part of the Universe must be a characteristic of every part. Evolution is not such a process.

Which also means, once again, that there is no basis for claiming that properties which are reportable as mentalistic are sourced in some kind of irreducibly supervenient or emergent creationist occurrence. They are sourced only and totally in the nominal first state and the nominal first state must have had the properties necessary for the occurrence of every state of every part - or the whole - of the Universe that has ever occurred or ever will occur.

The reference here to creationism is pertinent as there appears to be something of a hankering after an emergent form of creationism on the part of some philosophers - a coming into existence of properties which are not reducible to and are not evolved from the fundamental properties of the Universe. According to this particular thesis, something entirely irreducible and unpredictable has somehow emerged, either as some kind of non-deterministic, unpredictable and unretrodictable evolutionary step or as a creative act by an external power.

There is no incontrovertible analytic argument or demonstrable empirical evidence that such a step ever occurred, however, and the emergent form of creationism can be rejected as completely as its big sister, creationism in the form of a literal interpretation of the Bible. The empirical evidence is now enormously to the effect, and increasingly so, that all states of the Universe are sourced entirely in previous states right back to the nominal first state and consequently back to whatever preceded that nominal first state.

We are left with the question as to what are the properties of the fundamental substance of the Universe which have brought about the particular holistic properties of human beings today which are reported as mentalistic.

The question can be divided into two parts, one concerned with the ultimate significance of the properties of the fundamental substance of the Universe - and the ultimate significance of the Universe itself - and the other concerned with the mechanics of the Universe - in this case, with the mode of evolutionary formation and the constitution of the holistic properties of more complex parts of the Universe.

The first question resolves itself into the question of how it is that the Universe with its particular properties exists rather than nothing at all and is almost certainly unanswerable by human beings.

The other question can at least be dealt with to some extent today and a point of great significance is immediately revealed in the process. The particular point is that the holistic properties which are reported as mentalistic are properties which become more complex as the complexity of the part of the Universe concerned becomes more complex. They are not a function of one particular and unique part of the Universe such as the human brain today. According to the empirical evidence, elementary forms of the properties are distributed throughout the realm of animate matter, assemblage of the more elementary forms of animate matter into complex forms merely bringing about more complex holistic properties, reportable as being more complex mentalistically. An obvious case evidencing this effect is that of the development of intelligence as the size,structure and content of the pre-hominid, hominid and human brains have developed during the course of evolution.

Most recently, as already noted in sections 7.2 and 8.2 above, there has been the development of conceptual power, and thereby the sense of self, as a function of the development of the frontal lobes of the brain which are so characteristic of the cranial structure of Homo Sapiens

What we are claiming here is that the mentalistic reporting of the properties of parts of the Universe is demonstrated by the empirical evidence at least back to extremely elementary life-forms and there is no reason, on the available empirical evidence, to reject the claim that the nominal first state had properties which were reportable as being mentalistic in some fundamental form and which could bring about more complex mentalistic states at any subsequent time thereafter whenever conditions were suitable. On this basis, the deterministic identity theory is not merely a statement that the Universe is a monistically sourced, deterministically functioning system today with properties, at certain 'higher' levels of evolutionary development, that are reportable as mentalistic but also a statement that the Universe has always been and

will always be such a system. It is only as to what makes the properties of particular parts of the Universe such that they are reportable as mentalistic that human knowledge has as yet failed to reach anything more than the the most tentative of hypotheses.

One such hypothesis is that by Schroedinger; "The only possible alternative is simply to keep to the immediate experience that consciousness is a singular of which the plural is unknown; that there is only one thing and that, what seems to be a plurality, is merely a series of different aspects of this one thing, produced by a deception (the Indian Maja); the same illusion is produced in a gallery of mirrors, and in the same way Gaurisankar and Mt. Everest turned out to be the same peak seen from different valleys."(1)

In other words, the mentalistic reportings which are attributes of certain individual life-forms are evidence of an underlying commonality and universality of properties which are of the mentalistic kind, the mode of evolutionary development from commonality to individuality and the relationship between commonality and individuality being a crucial and outstanding problem of ontology.

The problem is examined further in the next section in terms of the constitution of individuality and self-hood.

8.4 Individuality, self-hood and commonality

Attention has already been drawn to the probable mode of incidence of the sense of self - that it is an extension of or a particular form of cognitive consciousness and is identical to a state of the brain when frontal lobes are an effective integral part. Individuality and self-hood therefore differ from each other only in that individuality is the particular set of structural and functional properties which differentiate one part of the Universe from all other parts whereas self-hood is the form of individuality which includes a sense of self.

However, this is merely a peripheralistic element of the occurrence of individuality and self-hood and does not account for that occurrence in the most fundamental and comprehensive terms. What am 'I' that everyone else is not - quite independent of whether or not there is any development of a sense of self - is a basic question which must be analysed more fully than previously in the study in any attempt to reach an understanding of the fundamental constitution of individuality and self-hood.

The following statement by Schroedinger is generally and increasingly believed to be true within philosophical circles concerned with the philosophy of science; "What is this 'I'? If you analyse it closely you will, I think, find that it is just a little more than a collection of single data (experiences and memories), namely the canvas upon which they are collected. and you will, on close introspection, find that, what you really mean by 'I', is that ground-stuff upon which they are collected."(1)

The question here is what is the constitution of that "little more" and how little is it? To reach something of an answer, it would appear that two particular elements of the problem need to be examined;
(1) the relationship between, on the one hand, phylogenetic and environmental forces and, on the other, the constitution of individuality and self-hood and
(2) the relationship between, on the one hand, the holistic unity of a plant, an ant or bee colony or a composite animal organism such as a human being and, on the other, the fundamental properties of the Universe that have given rise to these forms of holistic unity.

The first of the elements listed above that need analysis is that of the relationship between phylogenetic and environmental forces on the one hand and the constitution of individuality and self-hood on the other. Perhaps the empirical evidence most devastating to the commonly held

assumption that individuality in the form of self-hood is somehow an eternal state is that, as Schroedinger points out, there is no element of personality or behaviour which is not a function solely of phylogenetic and/or environmental forces. The closeness of the type-type relationship is evidenced by the close token-token relationship between particular phylogenetic and environmental forces on the one hand and particular 'mental' and 'physical' characteristics on the other of each and every member of the human race. Every human being is clearly a product of his phylogenetic origins and of his environment, and the particular characteristics which mark his individuality and, under normal conditions, his self-hood are always ascribable, with enough knowledge, to particular phylogenetic and environmental forces.

This being so, our analysis reaches a conclusion equivalent to that by Schroedinger; the characteristics of individuality and self-hood are a peripheralistic function of phylogenetic and environmental forces and are individual only to the extent that the forces are individual. If all individuals were formed by exactly the same phylogenetic and environmental forces, they would have exactly the same personal characteristics, i.e., be perfect clones of each other.

Yet there would still be something that differentiated between the individual clones - the something being their different spatial positions in the Universe and each clone independently being cognitively conscious of the external world. Delete the effect of all the phylogenetic and environmental forces and something still remains - the part of the constitution of the individual that is the something which is moulded or impressioned by the forces. This is of course Schroedinger's 'ground-stuff' and perhaps also the 'I-ness' which Hofstadter is thinking of when he asks "Why can't my I-ness belong to some other body?"[2] provided that Hofstadter is ascribing I-ness to what is being conditioned rather than to the conditioning. But what could be transferred from one body to another if all the characteristics of individuality had been deleted?

Which is not to say that there is nothing left that could be transferred but there would surely be little point in doing so if all the characteristics of individuality had been deleted and the little more is merely a part of the fundamental substance of the Universe. The constitution of individuality would be merely a conditioning of part of that fundamental substance by phylogenetic and environmental forces.

That this is the most logical interpretation of the empirical evidence is further supported by what is clearly an endless multiplicity of life-forms.

In particular, there is no logical reason to assume a limit to the number of people who could be born, live and die, each a product of the particular phylogenetic and environmental forces applying at the particular point of evolutionary time. One explanation of this apparent infinity of possible people appears to be more logical than any other - they are all essentially the one thing and it is in this one thing - the entity that is the Universe - where permanence and ultimate significance lies, not in the ephemeral, peripheralistic manifestations.

On this basis, Schroedinger's 'little more' is the Universe as a whole and the 'soul' of a person is the 'soul' of all people.

The above considerations appear to eliminate the last possibility of determining something permanently individual that is the 'I' of self-hood. If this is the reality of the position, it could be held that commonality is universal and timeless and we are somehow at all places and at all times with individuality an illusion born of naive realism. This in effect is the gist of the following statement by Schroedinger: "But not in this sense - that you are a part, a piece, of an eternal, infinite being, as aspect or modification of it, as in Spinoza's pantheism. For we should then have the same baffling question: which part, which aspect are <u>you</u>? what, objectively, differentiates it from the others? No, but, inconceivable as it seems to ordinary reason, you - and all other conscious beings as such - are all in all. Hence this life of yours which you are living is not merely a piece of the entire existence, but is in a certain sense the <u>whole</u>."(3)

Such a hypothesis is of course highly speculative even though it is reasonably well supported by the available empirical evidence. At least the probability of its truth can be held to be greater than that of any alternative put forward to date in philosophical deliberations. In any case, it does not provide a perfect answer to the question since it says nothing in regard to the mechanics of the relationship between individuality and commonality. As noted in section 8.3, this is judged by Schroedinger to be one of the most difficult problems of all in the search for an understanding of the constitution of self-hood.

Nevertheless, the hypothesis does provide something more of an answer to the question of what am I which everyone else is not? On the available evidence and in accordance with the commonality interpretation of that evidence, the answer would appear to be <u>nothing</u> as far as the <u>fundamental</u> constitution of my individuality and self-hood is concerned. The evidence indicates only that we are all essentially one and the same entity and never anything else and that the only significance and permanence which

we can ascribe to ourselves is the significance and permanence of that common entity - which, of course, according to the deterministic identity theory, can only be the Universe as a whole.

The second element of the basic question is concerned with the relationship between holistic properties and the constitution of organisms and it raises a number of important questions in its own right - notably that of in what significant way are the holistic properties of human beings different from those of an ant or bee colony. A human organism is similarly a concentration of directive forces controlling the functioning of a molecular and cellular assemblage - differing, it would seem, from the ant or bee colony only in that the cells of a human organism perform different tasks than in the case of the cells of which the ants and bees are composed. This does not appear to be a difference of a highly significant kind. The holistic property is surely the only property of any significance vis-a-vis the question of the constitution of individuality and self-hood and this property occurs, even if different, in both cases.

Hofstadter finds great significance in the holistic ordering of events in the case of an ant colony and he is prepared to ascribe the same holistic feature to the phenomenon of the brain[4] while Davies points out that holistic phenomena entail reductionist relationships and refers to Bohm as one who has attempted to formulate a holistic form of physics in an endeavour to account for holistic phenomena in fundamental terms.[5] Hofstadter, Davies and Bohm are all thereby further evidencing the current attempt in science and the philosophy of science to understand the reductive relationship between holistic properties and the fundamental constitution of the Universe. Such an understanding would further support the claim that individuality and self-hood are explicable fundamentally only on a commonality basis.

One point regarding the relationship between holistic properties and the fundamental constitution of organisms is beyond dispute; whatever the particular difference between the holistic properties of the human organism and those of an ant colony is, the empirical fact remains that the two cases are different forms of the same phenomenon - that of the occurrence of properties beyond those of the individual constituent elements merely grouped together. In both cases, the whole is greater than the sum of the parts - a statement which is not limited in its applicability to animate matter but extends throughout both animate and inanimate realms of the Universe. An atom has holistic properties which far surpass the properties of its sub-atomic elements standing alone.

Similarly in the case of an individual molecule, a cell and the human brain. In all cases, internal relationships bring about holistic properties which would not exist if those internal relationships did not occur.

What can the fundamental constitution of individuality and self-hood be under these reductionist conditions? If the properties of the brain are holistic properties of the brain's constituents which have come together in a certain way, they are holistic properties of all levels of constitution of the brain, i.e., of the molecular structure, of the sub-atomic particles and of the fundamental substance of the Universe that is the fundamental level of constitution of the brain. The basic constitution of individuality and self-hood can then be nothing other than a holistic property of the fundamental substance of the Universe just as the holistic properties of an ant or bee colony can be nothing other than holistic properties of the fundamental substance of the Universe. In all such cases, there is nothing apparent in the situation that provides support for any theory other than that of some kind of fundamental commonality.

We have now carried out a short analysis of important aspects of the question as to what is the constitution of individuality and self-hood and, in no case, have we been able to locate any element which could be held to be indicative of the existence of any kind of individual 'self' as an independent, permanently existing entity. Always the indications are to the effect that individuality and self-hood are merely particular transitory characteristics of a particular transitory concentration of the fundamental substance of the Universe. On this basis, individuality and self-hood are functions of the fundamental commonality of the Universe and individual beings have properties which are reportable as mentalistic solely because the fundamental properties of the Universe are inherently reportable as mentalistic in some way.

In other words, all properties of all states of existence of the Universe - and all reportings of those properties - are sourced only in the properties of the nominal first state.

As for what the properties of the fundamental substance might be that are responsible for the properties of individual beings being reported or reportable as mentalistic, no one has as yet been able to formulate a theory in anything like informative terms . Schroedinger can do no better than to say, "If we decide to have only one sphere, it has got to be the psychic one, since that exists anyway (cogitat-est)."[6] There is obviously much more to the subject than that but it would be inappropriate to attempt to go further into the question as part of the present study as

such an attempt would be little more than highly speculative. All that has been attempted in the present study is to highlight the analytic arguments and empirical evidence that have been leading, with ever increasing weight, towards a more deterministic and monistic formulation of the identity theory than heretofore.

T.Nagel puts the position bluntly; "I therefore doubt that the terms for expressing the two sides of a physicalist identity are at present available; and the development of physiological psychology could leave us with terms so tied to a common theory that any true identities we tried to formulate would be tautological. None of this is an objection to materialism, but it suggests that the formulation of that doctrine needs to progress beyond the terms of the traditional identity theory."[7]

What is missing from Nagel's paper is recognition of the fundamental commonality of the Universe. Recognition that the Universe is a deterministically functioning, monistically sourced entity or system with fundamental properties which can give rise to the a priori mentalistic reporting which is designated as self-awareness has far reaching implications in regard to individuality, consciousness and being and these implications stand irrespective of the answers to the questions which Nagel addresses. Everything in the analytic arguments and the empirical evidence is for, and nothing is against, the statement that the fundamental constitution and significance of individuality and self-hood is to be found only in the fundamental commonality of the Universe and in nothing else. On this basis, we are what the Universe is and we exist in one form or another just as long as the Universe exists in one form or another - which, on the evidence and on the only logical interpretation of that evidence - cannot be other than eternally.

9. The deterministic identity theory and human affairs

9.1 Introduction

Previous sections of PART IV of the study have been an explication of the content of the deterministic identity theory as an ontology of consciousness, being and knowable reality but little has been said regarding the relationship between that theory and the world of naive realism of which we are an integral part from day to day. To provide a description of the sourcing, fundamental structure and mode of functioning of the Universe as a whole and of human affairs as part of the Universe is not necessarily to provide a complete description of human affairs. To achieve that, we have to relate all that we know regarding the underlying structure and mode of functioning of the Universe to the same elements of human affairs and achieve such an understanding of the latter that predictability of individual, community and world affairs - the schemata of logical necessity - can be matched accurately to the deterministic realities.

To carry out such a project to the point of perfect predictability would obviously not be merely a mammoth but an impossible task. We do not have, and never will have, adequate knowledge for achieving such an end even though an impressive level of predictability - and, to that extent, verification of the principle of determinism - has already been achieved in the realm of science and technology, including to a significant extent, the realms of biology and psychology.

Further, many a world figure has made use of his knowledge of the processes which have operated in the history of mankind to plan his moves for the future. The saying that history repeats itself is a reflection of the determinacy unconsciously assumed as the mode of functioning of human affairs - pointing once again to the predictability of human affairs if enough knowledge was to hand regarding all the relevant factors. Given the same or effectively equivalent factors, the same outcome is bound - and is found - to occur.

However, the question here is not that of establishing the truth of determinism in the realm of human affairs. That would be obvious circularity since the instant-by-instant predictability of day by day human affairs, i.e., of the realm of naive realism, has been presented as part of the evidence pointing to the truth of the principle of determinism.

The question here is that of to what extent has conscious and unconscious

awareness of the principle of determinism and the identity theory already been a factor in determining the course of human events and to what extent can a continuation and further development of that process be anticipated in the future. If it ever came fully to pass - and the trend is certainly in that direction - such a self-reflexive process by mankind in toto would be the ultimate case of Godel's Incompleteness Theorem. It would involve, on the one hand, awareness that the structure and functioning of the world is entirely monistic and deterministic and, on the other, the empirical fact that the world is structured and functions on that basis - a mixing of subject and object which places complete knowledge only at the end of an infinite regress and, even more, if carried to the limit, would change the principles of sound thinking radically.

Detailed considerations along this line are beyond the scope of the present study except to the extent outlined in section 9.3 below but certainly warrant exhaustive analysis in a further study. The following sections of the present study deal only with particular cases where there has already been significant change in the human outlook towards acceptance of the truth of determinism, monism and/or the identity theory and where there are clear indications of further such change. Such changes will, sooner of later, lead to detailed consideration of the self-reflexive implications and thereby to the above-mentioned radical transformation of the human outlook.

One of the cases involves the relationship between the thinking of an individual human being, determinism and the thinking of mankind in general. In a world functioning deterministically, every statement and decision made by everyone is a deterministic outcome from memory content, afferent sensory inputs and processing by the brain and is an expression of individuality only to the extent that these three ingredients of the making of a particular decision occur in a particular brain. None of the ingredients is of the person's own making and therefore neither is the decision.

Thus, in a world functioning deterministically, no claim can be made as to non-deterministic originality for any advance in human knowledge. The claim that all the great advances in human knowledge have been due to the occurrence of individuals with special, unique properties of the brain is true, on the evidence, only to the extent that particular individuals happen to be the focus of a particular state of commonly held knowledge and thereby individual memory content; of particular afferent inputs; and of particular processing capability of the brain. The efferent is solely a function of phylogenetic and environmental forces and occurs in a

particular individual only because that particular individual happens to be the first with the necessary memory content, afferent inputs and brain processing capability. As direct evidence supporting this statement, there is the frequent co-occurrence of similar scientific discoveries at more than one location in the world.

What we are emphasising here, as a corollary of the deterministic identity theory, is the deterministic functioning of the world of every day human affairs - that the functioning of an individual human being is part of the deterministic evolutionary process and is nothing other than part of the process. The evolutionary process is the fundamental reality and its 'surfacing' in a particular brain is peripheralistic to the process just as the whole cultural state of a community is a surfacing of the deterministic evolutionary process at a particular place and time and can, with ever increasing accuracy, be accounted for in terms of the particular environmental conditions appertaining at that place and time. The individual state is deterministically sourced in the community state and the community state is deterministically sourced in the state of knowledge and environmental conditions.

Once we accept that the properties of individuality are deterministically sourced in the properties of commonality - in particular, in the properties of a community as a whole and thereby in the properties of the underlying evolutionary process (and thereby again in the properties of the nominal first state), attention can be focussed upon the properties of a community and the evolutionary forces which have determined those properties.

What we are both observing and being caught up in today is a massive dominance of, and changing of, the human world and the human outlook by the discoveries of science and the inventions of technology - evidencing once again that there is nothing in the process which can be held to be of non-deterministic origin.

So, if the process today is entirely deterministic and is dominated by the discoveries of science and the inventions of technology, where does it appear to be heading other than towards more disillusionment and disorder on the one hand and more knowledge and a new outlook on the meaning of life on the other? To recognise that the world functions deterministically is to raise questions of tremendous importance which have only been touched upon in recent scientific and philosophical literature. A whole new realm of scientific and philosophical investigation is waiting to be dealt with as a consequence of general acceptance of the truth of determinism, monism and the identity thesis - consequences as to the

place of man in the Universe; the constitution of being; religion; responsibility; morality; law; conditioning of the thinking and behaviour of others; self-conditioning etc etc. Earman, Strawson, Bennett, Ayer and Wolf - following d'Holbach of two centuries ago - are among those who have touched upon some aspects of these questions but, without doubt, future philosophers will be driven to be far more concerned with such questions as the deterministic functioning of the Universe and the world of human affairs becomes ever more accepted - consciously or unconsciously.

9.2 The deterministic outlook and linguistics

To accept the truth of a theory such as the deterministic identity theory would be one thing. For that truth to become fully integrated into the human outlook and behaviour would be quite another. There would be massive changes in a person's outlook, both towards others and towards himself or herself, primarily in the direction of the withering away of the traditional dualistic assumption that each of us is some kind of possessor of and originator of our thoughts and emotions and the substitution of the view that we are those thoughts and emotions and nothing individual else and also that they have been derived deterministically and totally from the past.

It is remarkable that the empirical evidence pointing to the truth of this statement - so apparent in so many fields of observation - has been so disregarded or misrepresented in the past and is only now beginning to condition human thought and behaviour as the predictability of the functioning of the Universe, human affairs and the individual human being impacts ever more greatly upon human thought. What is still very largely lacking - and no doubt will remain lacking for many generations to come - is a highly considered application of such thinking to questions of responsibility, morality, law etc.

There is also something more - the problem of language being constantly phrased in terms which imply the existence of a possessor of the thought process and of everything else which is considered to be the mark of an individual human being or 'person'. It has been said that we cannot escape from the linguistic trap in which we exist from the time of birth - that all changes in the content of thought are no more than changes to linguistic conventions. However, this is not to diminish the value of human thought any more than to formulate a concept regarding the structure or functioning of the Universe in mathematical terms is to diminish the value of that concept.

Nevertheless, there is a particular disability today in that the linguistic representation of the world very strongly reflects traditional beliefs and conditions human beings to acquire those beliefs right from birth - and, even worse, to acquire highly divisive refinements of those beliefs. Not even the most thorough-going determinists have been able to avoid phrasing their statements in terms which imply a dualistic, anthropocentric structure to reality with the essence of a human being presented as some kind of separate entity or 'self', functioning independently of the laws with which the functioning of the rest of the

Universe accords.

To express the deterministic position more precisely, statements would have to take full account of the fact that, in a monistic and deterministically functioning world, man is an integral part of the Universe and of the evolutionary process and that representing the epistemological relationships linguistically as if they are between himself as an independent agent and the external world as something merely acted upon is inconsistent with the fundamental relationships involved.

This has not occurred in the past simply because there was little need for language to reflect anything other than the complexities of the day by day interrelationships between people and between people and their immediate environment. It is only now, when man is looking more deeply into the fundamental constitution of reality, that the question has arisen as to how language could more accurately take account of the new knowledge, notably that of determinism and monism, which is beginning to impact so noticeably upon man's understanding of the structure and functioning of the world.

Such a mode would have to differ significantly from the subjective and objective modes in which the human brain currently functions linguistically at the present time. The subjective mode is framed in terms of the impact of the external world upon the subject brain and the objective mode is based upon an attempt to view the world as would a totally uninvolved being from another Universe. The deterministic mode would, however, differ from the subjective and objective modes - particularly because these tend to imply a form of dualism involving a homuncular being or 'little man' in the brain which is either acted upon or is standing aside from the world. The deterministic mode would be framed ideally in terms which avoided any such implication. The classic case of both the subjective and objective modes is of course that of Descartes who gave the term 'I' the significance of an independent homuncular entity and thereby initiated a considerable part of subsequent philosophical thought.

On the other hand, Hobart has already indicated how simple statements such as "I produce my volitions.' which imply the existence of some kind of dualistic, free will being could be rephrased as "My volitions are produced by me.' to have something more of a deterministic and monistic connotation.[1] 'My' and 'me' in such a case would merely be referring to the particular human being without denoting a separate entity within that

human being which is exercising the function of producing volitions.

Apart from change of phraseology to avoid or minimise dualistic, non-deterministic implications, there is the particular question of the meaning and usage of key words such as moral responsibility, free will, praise and blame which have in the past strongly implied a non-deterministic significance to at least part of reality. Nowell-Smith[2] and E.Nagel[3] are two who have considered the matter, both concluding that a general acceptance of the truth of determinism would have relatively little effect upon what is denoted by such terms, The same acts would retain the same descriptive terms and only the connotations of the terms would change in accordance with the new understanding. The terms praise and blame would lose any religious significance but would continue to be used for acts which were either beneficial or detrimental to the general or individual good.

Nowell-Smith puts it very clearly; "We are faced, then, with a choice between altering the connotation and altering the denotation of the word 'free'. For my part I should unhesitatingly choose the former. It is always dangerous to monkey with the denotation of a word, since it is difficult to remember that we must no longer use it to apply to the things it has always been applied to. Could we, without confusion and self-deception, learn to say of what appears to be a deliberate action that it was not free? Even if we could, we should only be depriving ourselves of a very useful word. On the other hand, there is far less strain involved in learning to say 'The actions that have always been called free are still to be called free; only now, thanks to Freud, we know better in what our freedom consists.' We are already familiar with the way in which the connotation of a word changes as knowledge develops; and the alteration does not greatly change the connotation of 'free'. Two of its most important logical liaisons - namely, those with 'doing what I want to do' and with 'being responsible' - remain unaffected."[2]

Free will would be a particular case, the words coming to connotate merely lack of external constraint in the performance of an act. Constraint by innate psychological properties, childhood indoctrination, environmental influences etc would be excluded from the linguistic usage of the words but the part played by these forces in determining behaviour would be fully recognised and accepted. An analogous case is that of the sun rising and setting in general parlance whereas it is now understood that the phenomenon is due to the rotation of the Earth and not to any movement by the Sun. Another case is the current application of the word miracle to events of an unexpected and highly modifying nature which

would previously have been ascribed to divine intervention. The word denotes the same event but the connotation has changed as people have become more knowledgeable as to the true causes of events.

The most significant change would be that of the impact of the general acceptance of the truth of the elements of the deterministic identity theory upon the linguistic representation of the fundamental content of an individual human being. Since the truth of the principles of determinism and monism would imply that individuality is a transitory phenomenon associated with the state of life and that some form of commonality is the more fundamental and eternal state, it could perhaps be expected that the traditional concept of an individual 'soul' would change radically - in particular, lose its significance relative to that of the state of commonality.

However, there does not appear to be the slightest possibility of any such change, at least not in the foreseeable future. Awareness of one's existence as a separate, highly individual being during life is far too intense for that. Far more likely, the linguistic representation of the fundamental content of an individual human being would continue to be that of the 'soul', the connotation being the same as that of the individual 'soul' during life. There would be little need for the connotation to change greatly for existence after life since the loss of individuality then would not mean the loss of 'self', only transformation of this into some more universal form - the common essence or 'spirituality' of everything that is a part of the Universe as conveyed in the words of Schroedinger "We living beings are all simply sides or aspects of one single Being; a conclusion with which, as I have said, I, with Albert Schweitzer, am very willing to agree."(4)

All of the various changes of connotation noted above are already occurring. They are being promoted by the continuing discoveries of science which all point in the same direction - towards the deterministic unity of the whole of the Universe. The multitudinous intellectual aberrations which have come to fill the void left in many outlooks by the developing demise of the traditional forms of religion and associated philosophy - disastrous as this has been during the 20th century and may well be during the 21st - cannot ultimately prevail against the sharp edge of scientific truth.

In any case, full acceptance of the truth of the elements of the deterministic identity theory and any consequent changes to the linguistic forms would not diminish the sense of personal identity with which each

human being looks out upon the world. Each would still be a conscious centre of the world and meet very much the same emotional situations during life. There would be more than enough reason to continue to use the existing personalised linguistic forms but with different connotations to take account of the deterministic and monistic reality.

Probably the most noticeable effect of general awareness and acceptance of the truth of the principle of determinism, in particular, would be that upon the completeness of logical thought. A line of reasoning which does not take account of the deterministic sourcing of one's own thinking is a process which lacks an important element. A line of reasoning which took appropriate account of that sourcing could well lead to a different decision in that at least more of an attempt would be made to look at the matter objectively. Also, the process of thought in general would be conditioned by such an approach to look more deeply into the evolutionary sourcing of all events and decisions, unjustified truncating of the causal chain being minimised and understanding being enhanced thereby.

9.3 Conditioning and self-conditioning

By far the most distorting self-deception which affects human affairs is that of the assumption that each person is of his or her own making and is responsible for his or her decisions and behaviour. The scientific and other empirical evidence indicates that human thought and behaviour are totally determined by the phylogenetic and environmental forces operating.

Two corollaries of the statement need emphasising; first, the corollary that, in a world functioning deterministically, any conditioning of, i.e., effect upon, that world by anyone is an outcome of that person having already been conditioned by the phylogenetic and environmental forces operating. A deterministic sequence of events, including brain events, cannot be other than continuous and unending right back to the nominal first state. Second, a person who is an integral part of a deterministically functioning, monistic system can never hope to fully understand and predict the future state of the system since what he knows can never exclude the effect of the involvement of himself.

The complexities arising from this second limitation are daunting and, in their totality, clearly far beyond our intellectual capacity to take account of fully. Every time there is a need to make a decision regarding any matter, three aspects need to be taken into account if we wish to reach the most rational outcome;
(1) The known facts
(2) Awareness that our own thinking about the matter has been determined by the particular phylogenetic and environmental forces which have operated upon us, i.e., every matter is looked at with the eyes of the past
(3) Awareness that any adjustment that might be made to the decision-making process in an attempt to take account of (2) is also totally determined and can never be more than a step in an infinite regress of adjustments and therefore that a complete understanding of all the factors cannot be reached before the decision is made.

Aspect (3) is a paradoxical situation which prevents anyone from ever making a decision which is independent of his or her own personal history and the particular phylogenetic and environmental forces which have been the cause of that particular history. This situation is seldom recognised in either individual or public decision-making but has been formalised in Godel's Incompleteness Theorem.

Nor is aspect (2) except to the extent that we are prepared to concede lack of or reduced responsibility for persons showing pronounced brain

derangement. We otherwise take little account of phylogenetic and environmental influences when ascribing responsibility and almost invariably ignore even the obvious relationship in that the so-called good are typically those who are fortunate in the phylogenetic and environmental forces which have formed them and the so-called bad are typically those who are unfortunate.

The reality, in a world functioning deterministically, is that character and behaviour are solely deterministic functions of phylogenetic and environmental forces and change in one or other of these forces is necessary for change in character and/or behaviour. No change in the forces and character and behaviour remain unchanged.

The deterministic relationship between character and behaviour on the one hand and phylogenetic and environmental forces on the other is particularly apparent in the conditioning we are all subjected to from the moment of first sensory input to the moment of death - conditioning as children; students; manipulated members of society; psychiatric or psychotherapy patients; sports aspirants etc etc.

As already noted in section 7.1, the statement 'Give me a child until he is seven and I'll have him all his life.' is a well-known statement indicating the impressionability of the human brain to carefully organised conditioning at an early age. It is also a statement which is highly denigrating of the significance and value of the characteristics of individuality, evidencing most forcefully the deterministic process which conditions the human brain to the point of a 'person' being no more than a reflection of the phylogenetic and environmental forces operating at any particular time in man's evolutionary history.

Thus, we become a Roman Catholic or a Mohammedan or a Jew-hater or an atheist or a human vegetable or a deranged maniac etc etc and we stay that way unless some new force comes into play - meeting a new way of thinking, needing to think differently because of some change of circumstance or the brain being changed as a result of age, injury, drug-taking or an operation etc. The world of mankind is full of very specific examples illustrating the claim that a person is what he is and thinks what he thinks solely as an outcome of the particular set of phylogenetic and environmental circumstances which made him what he is and what he thinks - none of the circumstances being of his own making. As Hospers says "He is a victim of a world he never made - only this world is inside him."[1]

This is what the empirical evidence clearly indicates and what the truth of the deterministic identity theory would imply - that we are all totally programmed from the nominal first state and, consequently, to the extent that we understand the forces acting upon the thinking and behaviour of people, to that extent we have ourselves already been conditioned and may have also been conditioned to attempt to modify the thinking and behaviour of other people along particular lines.

The effectiveness of indoctrination, psychiatry and psychotherapy and the vast amount of experimentation in the field of behaviour of other animals - rats, dolphins, chimpanzees etc - is only possible because of this, i.e., the fact that, when we set up a specific situation, we always get a specific response and the fact that our knowledge is great relative to the complexity of the situation. As our knowledge about all the forces affecting the situation increases, so does our ability to predict and modify the behaviour of other human beings and other animals. Clearly, there is no discernible limit to the possibilities. In a world functioning deterministically, if we knew everything about all the forces operating, we could predict the future thinking and behaviour of every animal other than ourselves precisely - and this is what we are starting to find in practice already.

So how should we act if our thoughts and behaviour are already totally determined - even the very thought that our thoughts and behaviour are already totally determined? How can we choose if the choice has already been programmed into us?

The empirical fact is that, in a world functioning deterministically, we do not choose or decide from some kind of independent, homuncular viewpoint. The process of choosing or other form of decision-making is simply a process of interaction between the various inputs entering the brain seconds, minutes, hours, days and years before, right back to the moment of its first existence, the process also involving the psychological properties of the brain at the particular moment concerned. The person himself, although he is an individual conscious entity, nevertheless has no independent, homuncular power whatsoever to manipulate the thought process and produce a different output from exactly the same inputs and psychological properties of the brain, i.e., bring about a different choice or decision from that determined by the inputs and the psychological properties of the brain. In a world functioning deterministically, there is <u>no</u> way that the output can be changed other than by change to the inputs or the psychological properties of the brain.

Which poses what amounts now to a standardised question; if a person were himself to know everything about all the forces operating and determining his behaviour at a particular instant regarding a particular matter, including everything about his own particular psychological attributes, then would he not be able to predict exactly what the forces were going to determine and consequently be able to decide to do something else, thereby demonstrating freedom of choice?

This is merely yet another case of the 'little man in the brain' syndrome. The input that makes a person decide to do something other than what he thinks he is predetermined to do is merely one of the forces which determine what he actually does. A person does not 'change his mind'. His mind, i.e., the state of his brain, is changed for him by a new conditioning force coming into play or by one of the existing forces being strengthened or weakened by some conditioning force changing.

This all being the case, it is apparent that, in a world functioning deterministically, the only way in which the mode of behaviour changes is by change to the forces which determine that mode. Given exactly the same innate psychological attributes, environmental conditioning and circumstances as Einstein, any other person would have come to exactly the same Theory of Relativity at exactly the same time. Given exactly the same psychological attributes, environmental conditioning and circumstances as Al Capone, any other person would have committed exactly the same murders at exactly the same time. It is well-known that, given the same circumstances, a criminal is very likely to commit the same crime again unless his psychological attributes or the particular circumstances have somehow changed to a significant extent in the meantime.

Once again, we can re-phrase Newton's Law of Motion and say that every human being always acts in a specific, predetermined way unless conditioned by a new force to change that way. Which also means that there is no escape for anyone ever. Every human being is totally and always a prisoner of the past.

We see from all this why Darrow, the defending counsel at the famous Tennessee monkey trial, was driven to the conclusion, after numerous cases as counsel for the defence, that the seeds of all criminal behaviour are to be found in the forces which have determined a person's outlook in the past and that, in most cases, the adult criminal is already to be seen in the child and in the particular circumstances, if one looks deeply enough with enough expertise. He had observed this fact, time and time

again, in preparing his submissions - that the defendant had come to be the way he was and to act the way he did as a result of forces acting upon him. In the end, Darrow was constrained to put his observations into a book.(2)

Not that such insight would have achieved much more in court than a lighter sentence for his client. The basic problems of morality, crime and punishment remained at the time and still remain. Moralists, criminologists and judges are constantly beset by the problem of deciding the extent of responsibility in the committing of a crime against the laws of society and how to deal with anti-social behaviour in general. Extenuating circumstances, he did not know what he was doing, he knew the difference between right and wrong (a simplistic statement if ever there was one), he was under the influence of alcohol - these are the simplistic phrases that can and do decide whether someone is sent to gaol or executed, is committed to an asylum for the insane or walks from the courtroom a free man again. And sometimes so-called experts are called to the stand in an attempt to resolve the question of responsibility - often only to confuse it even more with conflicting opinion.

The reason would appear to stem quite clearly from the deterministic nature of human affairs. In a world functioning deterministically, there is no such thing as a division between the realm where a person is responsible for his actions and the realm where he is not. He is what he is at the time of a crime and what he is at that time is the sum total effect of all the external forces which combined together to bring about his action at that moment. The choice that he seemingly makes between lawful and unlawful behaviour is already totally determined by the properties of the brain which have come down to him from his forbears, by the particular influences which have conditioned his brain and thereby his outlook since birth and by the particular circumstances existing at the time when the choice was seemingly made. There is no other factor and not one of the factors is of his or her own making.

There are many ways in which circumstances can change the acceptability of individual behaviour to society. A psychologically weak person, in addition perhaps highly indoctrinated by a religious or political upbringing that instils unquestioning acceptance of the authority's pronouncements, may well lead a blameless life in the eyes of that authority and of everyone else should events fall out that way .

It would be seen as a different kind of life entirely, in the eyes of a victim, should the burning of a heretic or gassing of a Jew be a required

act on the word of the authority. But the killer would still go home afterwards seeing himself deserving of approbation.

On the other hand, a psychologically strong person, in addition brought up in an environment that instils a strong distrust of any kind of indoctrination whatsoever except that of an attitude of critical inquiry, may well lead a life which is constantly regarded by others as reprehensible should circumstances be such that conformity is the accepted way of life of the time.

It would be seen as a different kind of life entirely, in the eyes of those same conformists, should circumstances change and rebelliousness become laudable as the only means of combating tyrannical authority. The unpopular rocker of the boat become its heroic saviour overnight.

The recent installation into positions of highest authority of East Europe freedom thinkers who for many years previously had been outcasts in their own countries is a remarkable example of this.

There have been many such cases throughout human history and many of the cases have involved the intelligentsia of a country. Students one day non-conforming upstarts and a trial to society; another day, front-line fighters against the excesses of a despotic regime and the first to die.

Recent notable cases were those of the East Europe and China uprisings by democracy-seeking students.

Individual men such as Akhenaten, Socrates, Jesus, Luther, Galileo and Darwin, all regarded as dangerous subverters by their own unenlightened generations, were all estimed greatly by later generations which by then had acquired something akin to the same level of understanding. Knowledge inevitably occurring in one person ahead of all others, sometimes so far ahead and apart that his life is forfeit in their resistance to any idea which threatens the status quo. That resistance stemming in its turn from childhood indoctrination by parents, peers and community authority as to what is right and what is wrong and each person seeing himself as a highly virtuous 'defender of the faith', but each person, in reality merely a puppet in the hands of the previous generations which had indoctrinated him in that particular way. Thus, both the thinker and those who resist the new thinking are but elements in the deterministic process and no question of religious morality is relevant.

We can see why human thinking has never been able to reach precise

definitions of perfect individual and community behaviour. Always there is need to allow for exceptions and/or extenuating circumstances but no way of specifying exact limits for those exceptions and extenuating circumstances. The soldier during war who obeys an order from an officer to kill a civilian and is later charged with murder by the victorious side. The government that has to decide between the greatest good for the greatest number and the rights of minorities. The man who kills an intruder who is threatening him with death and his wife with rape but is charged with manslaughter on the grounds of excessive retaliation. The woman who is pushed out of a lifeboat to drown because she is much the heaviest person aboard and the lifeboat is on the point of being swamped in a storm. The man who steals to feed his starving family when there is no other way and others have more than they need - perhaps because they have worked harder.

Thes are obvious cases where there is a difficult question of morality or ideal behaviour, quite apart from any legal question. And there are a vast number of other such cases where philosophers could argue interminably without ever agreeing upon a solution.

Church organisations which profess special authority in the field are constantly forced into imaginative sophistry, facile shifting of ground and grudging compromise as less regimented thought moves well ahead of them and finally prevails.

The intellectual difficulties outlined above in the case of progressive thought conflicting with conservative thought and in the case of moral dilemmas are well enough recognised but their relationship to the deterministic functioning of the world in general and the brain in particular is not.

The relationship between conditioning and the evolution of human thought can be further clarified by considering the situation that, if we delete <u>all</u> conditioning, i.e., <u>all</u> sensory inputs to the cognitive part of the brain, we are not even the organism that was potentially the person Helen Keller. She or 'it' was at least an organism which was conditioned by the internal bodily needs of thirst and hunger etc. But what if those stimuli and responses had also been totally removed from cognitive awareness by some form of surgical operation? What would then have been left? The question is highly significant since what would have been left would have contained everything that could be held to be independent of the conditioning process and potentially survivable after complete senility or death.

The answer appears to be inescapable - nothing of any permanent individual nature whatsoever exists if no sensory input of any kind, i.e., no conditioning of any kind, has ever occurred. The subject of conditioning is therefore one with profound implications as to the constitution of individuality and the constitution of mind and being. The subject was examined from a slightly different point of view in section 8.4 above.

There are those who would be quick to assert that, while the above analysis is perhaps valid as far as the conditioning and consequent 'individuality' of others is concerned, self-conditioning is a phenomenon which implies permanent individuality of some independent, dualistic kind. The line of argument would be a variation of the standard one in which so-called incorrigibility is held to be indicative of dualistic relationships.

In the case of self-conditioning, the argument would be that, for self-conditioning to occur, there has to be a 'self' which both carries out the conditioning and is conditioned, i.e., a mixing of subject and object which can only be explained by the existence of an independent subject. Consequently, it would be held to be an a priori truth that an independent 'self' exists if self-conditioning exists.

The argument that self-reference has any fundamental significance was rejected in PART III on the grounds of there being no logical basis for differentiating fundamentally between the stimulus-response process linking the central processing or cognitive part of the brain to the world external to the body and the stimulus-response process linking the central processing or cognitive part of the brain with the other parts of the body. Similar reasoning is applicable in the case of self-conditioning; there is no fundamental difference between the conditioning of others and the conditioning of 'oneself' in a monistic, deterministically functioning world. Exactly the same stimulus-response process is involved, the central processing activity merely being directed towards the functioning of the other parts of the body rather than towards the functioning of the world beyond the body.

The misinterpretation is once again sourced in that most common of all misconceptions - that of the 'little man in the brain' - the 'self' that supposedly both carries out the conditioning and is conditioned. Discard that misconception on the grounds that it is entirely unsupported by the empirical evidence - which is solely to the effect that the brain is a single entity - and the difference between the conditioning of others and

the conditioning of oneself is seen to be merely a different sequence of deterministically related events.

The question of the difference between conditioning and self-conditioning is perhaps of negligible importance compared to the question of the mode of incidence of conditioning of the thinking and behaviour of other human beings in the first place. The answer is once again only to be found in the evolutionary process and ultimately only in the nominal first state. Survival of a group of animals would have been promoted by cooperation between the members of the group and the most effective cooperation would be that when all members of the group act in the most effective manner. The development of intelligence to the point of cooperation was a major step in the evolutionary mechanism of survival and it would have been a small further evolutionary step advantageous to survival for the members of a group to react angrily to failure on the part of others of the group to carry out that cooperation effectively. Such a reaction would be the source of the urge to condition the behaviour of others and ultimately of oneself. It could also have been the source of the development of effective speech communication and the still further development of the sense of self.

In other words, Sellar's positing of the mode of incidence of self-awareness in the evolution of man is more than an adequate positing of the mode of incidence of speech communication, conditioning of others and self-conditioning also.

9.4 Interpersonal relationships

The human outlook of the 20th century has already evolved much further from that of the 19th century than is generally recognised even though evidence of the extent of the change and of the trend to what can only be called the deterministic outlook is to be found in many areas of human thinking and behaviour today.

One of the most affected areas has been that of interpersonal relationships. These are currently undergoing something of a transformation; an objective outlook based upon unconscious and conscious recognition of the truth of the principle of determinism is becoming much more characteristic of those relationships than ever before. A number of papers have been written examining the possible consequences of such a trend in the light of that recognition and, by their very occurrence, are evidence of what is occurring in this area of the human outlook. Papers by Strawson,(1) Ayer,(2) Bennett(3) and Wolf(4) have provided an initial analysis of the trend and its possible future consequences.

Strawson initiated the discussion and formulated the project as follows; "The question we have to ask is: What effect would, or should, the acceptance of the truth of a general thesis of determinism have upon these reactive attitudes? More specifically, would, or should, the acceptance of the truth of the thesis lead to the decay or the repudiation of all such attitudes? Would, or should, it mean the end of gratitude, resentment, and forgiveness; of all reciprocated adult loves; of all the essentially personal antagonisms?"(5)

Strawson answers his own question with the assertion that "This, then, is a part of the reply to our question. A sustained objectivity of inter-personal attitude, and the human isolation which that would entail, does not seem to be something of which human beings would be capable, even if some general truth were a theoretical ground for it."(6)

Ayer disputes Strawson's claim; "Even so, I think that he reaches his conclusion too easily, and my ground for this charge lies in his avoidance of any discussion of the general thesis of determinism. I hope to show that the content which it is reasonable to attach to the thesis is not so irrelevant to his arguments as he supposes it to be."(7)

However, after analysing the question along this line, Ayer finds himself unable to escape from a dilemma. "From this it appears to follow that I

should set myself to cultivate an objective attitude towards myself and others, and to welcome an ordering of society in which it was generally prevalent. What should concern me morally would be just the beneficence of the conditioning. At the same time I have to confess that the prospect of any such Brave New World repels me. Why it should do so is not clear to me."(8)

Bennett and Wolf show similar perplexity. They are both unable to discern how the conflict between participative emotional attitudes and the objective attitude towards others is likely to be resolved. Bennett can see no way out other than that expressed in the statement that "If our lives are to have a measure of warmth and engagement and spontaneity, we must pay the price of sometimes not acting in the prudent or fortunate way."(9) and Wolf goes even further along this road of disquiet when she says "If, despite the knowledge that this is our status ((i.e., that we are beings totally controlled by the processes of determinism)), we choose to retain our reactive attitudes, we choose to live as if we were a kind of being that we know we are not. In doing this, we choose something akin to self-deception."(10)

What is starkly apparent in the deliberations by Strawson etc is the very readiness, at this point of time, to go into the matter of the likely effect upon the human outlook of the principle of determinism. Fairly clearly, we are well 'down the track' towards general acceptance of the principle.

The deterministic source both of this trend to increasing objectivity in the human outlook and to conscious awareness of the trend as shown by the papers by Strawson etc is to be found in the ever increasing scientific knowledge of the deterministic springs of human thought and behaviour. Not merely psychiatrists but an increasingly large segment of the human race is now thinking and acting - still unconsciously for the most part, it is true - on the basis that determinism is true in the realm of human behaviour. The parent who sends his or her child to a particular school or church so that the child will be conditioned in a particular way for the rest of his thinking life; the physician who prescribes a particular drug and the surgeon who carries out a particular operation to alter the state of the brain and thereby behaviour in a particular way; the dictator or the demagogue who masterminds the outlook and thereby the behaviour of the populace in a particular way; the person who knows the personal characteristics of another person very well and uses that knowledge, Svengali-like, to manipulate the thought process and behaviour of that other person in a particular way; the community which ascribes indirect responsibility for what is considered reprehensible behaviour, e.g., a host

held responsible for drunken driving by a guest or parents held responsible for irresponsible behaviour by a child; all of these cases, and many more, are indicative of at least unconscious acceptance of the truth of determinism. The concept of a 'self' with individual properties beyond those imparted by phylogenetic and environmental forces has steadily and inexorably been losing any semblance of credibility.

The change has been promoted by the increasing disappearance of the individual human being into the one highly structured and unified social organisation, as noted by Adorno and Horkheimer[11] and consolidated by the ever-widening and ever-deepening mainstream of objective scientific knowledge which has now reached the point of dominating the intellectual activities and relationships of mankind almost as if the human race is little more than a collection of robots responding to the commands of a computer master-mind.

The incidence of the deterministic form of outlook as a further development of the objective form is evidenced by the readiness of the distressed, the inadequate and the intent to turn to psychiatrists, psychologists and psychotherapists for radical modification of their own character traits - thereby evidencing how far human thinking has already progressed in accepting, consciously or unconsciously, the truth of determinism in the realm of human behaviour and applying that truth in practice. As scientific knowledge regarding the forces which determine human thinking and behaviour continues to become more complete and precise, awareness of that knowledge continues to increasingly permeate the human outlook and itself increasingly become one of the forces determining thinking and behaviour. Increasing knowledge leading to increasing awareness of the deterministic forces operating and increasing awareness becoming a conditioning force in its own right.

Which is to say that the human outlook is passing from the almost totally subjective form wherein involvement in the external world - in other people and in the environment - was almost totally participative and non-objective, through the objective form wherein the behaviour of others is recognised as being deterministically caused, to the ultimate deterministic form wherein it is accepted, consciously or unconsciously, that one's own individual traits, thinking and behaviour are totally determined by external forces and that change in those traits, thinking and behaviour can only occur as a consequnce of change in the external forces.

There is little escape from the conclusion that the evolution of the human outlook has already reached something of a deterministic form and there

is no reason to believe that the evolutionary forces will not continue to operate in the same direction and ultimately bring about a comprehensive deterministic system of thought. This would inevitably involve considerable change in the nature of interpersonal relationships.

9.5 Religion

The realm of religious belief is well-known to be the realm wherein human thought diverges furthest from sound analytic analysis, the pertinent empirical evidence and just plain commonsense and there is little doubt that the realm will be the last to be transformed by the truth of any such theories as those of determinism, monism and identity.

Speculation, aided and abetted by emotion, will continue to find ways to justify the claim that self-hood is somehow an eternal state in some after-death form . One such way is that of claiming that individuality and self-hood are transformed after death into some kind of spiritual form approximating but entirely independent of the form during life. Any such theory would avoid the restrictions by determinism, monism and the identity theory and give free rein to satisfying belief in some kind of after-life heaven but it would do so only by rejecting both the analytic arguments and the vast amount of consistent empirical evidence which do not support any such speculation.

The mode of sourcing of such speculation can also be examined to determine its deterministic origin and thereby perhaps further question its validity. In a world functioning deterministically, all concepts and beliefs, including religious concepts and beliefs, are deterministic outcomes of the innate reasoning capability of the brain, the empirical data that comes to the brain via the sensory organs and the emotional drives which are an innate part of the human psyche. The concepts and beliefs are therefore sourced entirely in the distant and immediate past and reflect nothing but the phylogenetic and environmental forces appertaining at a particular point in the evolutionary history of the individual and of mankind.

We see this in the history of religious concepts and beliefs. Each has been an outcome of the particular circumstances appertaining at the time - emotional need underlying every religious concept that has ever been put forward but every religious concept reflecting the state of knowledge regarding the Universe and the human world at the particular time.

During the period when the demands of survival and daily life dictated the whole of man's outlook, religious concepts could scarcely have taken any other form than that of postulating anthropomorphic beings which controlled the forces of nature and dispensed largesse or disaster upon the human world, both during life and during some supposed 'happy hunting ground' after life. The ingredients for any other concept were simply not

available and, in any case, the concepts satisfied the emotional need for a continuation of the child-parent relationship with its aura of protection in the face of a harsh and threatening world. Characteristics of protectiveness, annoyance and responsiveness to supplication were ascribed to the 'gods' exactly the same as those actually displayed by parents.

Obviously, little has changed for the great majority of human beings during the whole of prehistory and historical time - only the replacement of the concept of a multitude of gods by the monotheistic concept. There is still a deep-seated emotional need to look to some kind of protective father-figure for comfort in the face of the mysteries and disasters of life. We are all, in many ways, still children afraid of the dark and the most childish among us are those who are the most dependent-upon belief in an all-powerful father-figure.

The factors which have held mankind to such a low level of religious conception are only now being outweighed by the empirical evidence and the concept of a paternalistic god is only now being replaced by the first outline of a universal spirituality or psychic commonality of some kind without any anthropomorphic, personalised characteristics. Various versions of such a psychic commonality have already appeared, notably those of Spinoza, Schopenhauer, Heisenberg and Schroedinger and, most recently, Honderich whose statements in this field are very much in line with the conclusions of the present study in the field of religion. "If a determinism is true, it may be said, I cease to be a trivial existence. I cease to be what by contrast with the universe is a momentary and insignificant thing, the antithesis of anything of grandeur. I can, through my perceived membership in nature - my relation to it is properly so described, rather than as an external relation - escape the mereness of myself. I escape an isolation from the natural world. In place of triviality and isolation, I can identify with the greatest of realities. There is the satisfactory possibility, further, of having a certain view of my own species and its history, a view which brings it together with other species and so rises over a petty anthropocentrism. Determinism, therefore, may be claimed to be far from being 'the hideous hypothesis' (Hampshire, 1951, p.179) and in fact the source of a deep satisfaction."(1)

The trend towards belief in an atheistic universal spirituality or psychic commonality of some kind, consistent with a monistic structure of the Universe, is evident.

It is no part of the scope of the present study to develop the belief into a

comprehensive religious system but we can be assured that such a system will sooner or later come into existence as an outcome of the increasing empirical knowledge and understanding.

PART V CONCLUSION

The project set out at the commencement of the study was to establish a theory of consciousness, being and knowable reality that is fully consistent with all the relevant analytic arguments and empirical evidence. It was considered that such a theory would be an extension of the traditional Identity Theory and the first part of the study was directed to recapitulating and strengthening the case put forward for that theory.

In this regard, it was noted that the traditional Identity Theory is very largely directed to establishing that the statement that a 'mental' state is identical to a 'physical' state is devoid of inconsistency and refers little to the particular scientific and other empirical evidence which points to the truth of the theory. As a result, a review of such evidence followed in PART III of the study and this led to the conclusion that three principles are particularly significant in the structure and functioning of the Universe and thereby in any attempt to formulate a comprehensive theory of consciousness, being and knowable reality.

It was also particularly noted that there are substantial objections to the widespread belief within philosophy that quantum phenomena are evidence of an element of some kind of ontological indeterminacy in the functioning of the sub-atomic realm and reference was made to a uniquely authoritative group of scientists and philosophers - Einstein, Planck, Bohm, Hawking, Schroedinger, Russell and Honderich particularly notable among them - who do not agree with that belief.

The three principles identified were those as follows:
1. The principle of deterministic necessity, i.e., determinism, which states, on an epistemological basis, that 'If p then q', and, on an ontological basis, that the Universe can be fully represented by a mathematical expression with time as the only variable.
2. The principle of monism which states that only the one knowable entity or system was sourced in the Big Bang, the primary plasma state, a 'singularity' or whatever else is taken to be the primary state of the Universe.
3. The principle of conservation of energy which states that energy is always conserved in the functioning of the monistic entity or system that is the Universe according to 2. above.

Further, it was argued that the notion of cause has only limited significance in the case of a universe functioning deterministically since

the transition from state p to state q of such a universe, on the basis of If p then q, does not require any explanation as to why q when p. Nor can a complete explanation be forthcoming in terms only of p since, in a system functioning deterministically, the source of the forces which occasion the change of state from p to q is to be found only in the 'first cause'. Further, since the traditional concept of the 'first cause' as involving something originating in total nothing or something created by a deist god would appear very strongly to be merely a nonsense or imaginative, unrealistic and unsupported speculation, the question of the source of the forces involved in the evolution of the Universe was truncated, for the purposes of the study, to the moment immediately prior to the Big Bang, the moment of the primary plasma state, a 'singularity' or whatever else is taken to be the primary state of the Universe. The state of the Universe at that particular moment was designated as the nominal first state of everything that followed.

In accordance with this truncating, all states of the Universe - and therefore all states of the human world - are deterministically related back to that nominal first state.

As a corollary of the three principles, it was argued, first, that the fundamental structure and functioning of the Universe accords with what most appropriately could be called the theory of deterministic monism and, second, that the traditional Identity Theory should be replaced by a more comprehensive theory of consciousness, being and knowable reality which takes full account of the analytic arguments and the empirical evidence. That more comprehensive theory was termed the deterministic identity theory on the grounds that determinism and the identity thesis are the most significant elements underlying the theory.

According to the deterministic identity theory, the brain is a totally reductive entity, its holistic properties being identically holistic properties of every level of constitution, including the level that is a part of the fundamental 'substance' of the Universe.

Further, it was noted that the mentalistic reportings of the brain, i.e., all forms of 'experience' or consciousness, are a priori reportings as first espoused by Descartes in his statement "I think therefore I am." but that physicalistic properties are only the contingent properties by which cognitive consciousness picks out the external world - including that part of the external world that is conscious and has the contingent physicalistic properties which are involved in its being picked out as the brain.

Particular attention was given in PART IV to the question of what is self-hood or I-ness in the light of the empirical evidence. Based upon the empirical evidence, two important claims were made - first, the non-existence of any fundamental distinction between cognitive consciousness or awareness of the external world and self-awareness or the sense of self, i.e., awareness of one's own body and one's own thinking. It was claimed that cognitive consciousness is identical to the state of the brain following upon sensory interaction with the external world and involving merely awareness of the external world and of interaction with that world. The sense of self was claimed to be merely an extension of the same process, being identical to a state of the brain when this includes frontal lobes as an effective integral part.

Second, it was claimed that individuality is only a peripheralistic, transitory property of reality and that permanence is only logically to be found in some kind of underlying psychic commonality of everything that is a part of the Universe. Reference was made to philosophers who have already propounded variations of this particular theory.

It was also anticipated in PART IV that conscious and unconscious acceptance of the truth of determinism, monism and the identity theory, i.e., of the truth of a theory such as that of the deterministic identity theory, would entail considerable change in the human outlook, in human affairs and in the scope and direction of philosophical analysis - notably, in areas of conditioning, self-conditioning and responsibility such as those of education, interpersonal relationships, psychotherapy, morality, crime, punishment, law, etc, etc including, as a special problem in philosophical analysis, the problem of how to take full account of the deterministic sourcing of our own thinking. This was the problem noted in section 9.3 as involving Godel's Incompleteness Theorem and which could also involve analysis further along the line of that of the present study.

It was further noted that there is already a definite trend in the direction of all these changes as a consequence of the deterministic relationships already apparent in a number of fields and it was claimed that the trend can only become more apparent and more consolidated as the deterministic relationships become ever more widely understood and accepted. It was finally concluded that a new kind of human being and a new kind of religious belief and system is very likely to be the end result.

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